International Journal of American Linguistics

VOLUME XXV April, 1959 NUMBER 2

ARIZONA TEWA II: PERSON MARKERS

JOHN YEGERLEHNER

UNIVERSITY OF ARIZONA

8. Definitions
9. Stative X
10. Active X

8. This paper is concerned with a set of prefix sequences, labelled X, whose members occur in combination with following Verb themes and themes formed from Verb themes. All examples of X plus theme in the present paper will be in the context of the Verb word.

A prefix is a single morpheme standing, within a word, prior to the stem(s). A prefix sequence is a succession of prefixes. A Verb word (*V*) is a word whose theme is a Verb theme (V). (Definitions of the terms 'word,' 'theme,' and 'stem' will not appear in the present paper but in appropriate sections of later papers in this series.)

Members of X mark person and number and related categories. Person and number are also marked by Noun words (*N*) standing prior (or usually prior) to Verb words.

Certain *N* are called anim(ate) *N*. (These are the only *N* to be considered in the present paper.) Such words, and no other members of class *N*, show a number contrast. Every anim *N* is either a singular *N* (sg *N*) or a non-singular *N* ($\overline{\text{sg}}$ *N*). The category $\overline{\text{sg}}$ is marked by a suffix of varying shapes which appears immediately after the N theme. The category sg is marked by Ø.

N words displaying theme na∼naa[1] are called 1st (person) *N*—for example, naa-Ø *I*, na-ʔin/na-n[2] *we*, where Ø marks sg and -ʔin∼-n marks $\overline{\text{sg}}$. *N* displaying theme ʔɥ are called 2d *N*—for example, ʔɥ-Ø *you sg*, ʔɥ-n *you* $\overline{sg}$. All other *N* are called 3d *N*—for example, heʔ-Ø *he, she, it*, he-ʔin/he-n *they*.

Each member of X is in cross-reference with certain *N*.[3] All X in cross-reference with 1st person *N* are said to fall into set 1ST; with 2d person *N*, into set 2D; with 3d person *N*, into set 3D.

All X which are in cross-reference with sg *N* are said to fall into set SG; with $\overline{\text{sg}}$ *N*, into set $\overline{\text{SG}}$. Any $\overline{\text{sg}}$ *N* can occur immediately juxtaposed to P(articles) wíkíndí, wíyé(dí) *two*, poyendi, poye(di) *three*, sonu(di) *four*, etc. All $\overline{\text{sg}}$ X which stand in cross-reference with sequences consisting of a $\overline{\text{sg}}$ *N* and the P *two* are said to fall into subset DU(AL); all $\overline{\text{sg}}$ X which stand in cross-reference with sequences consisting of a $\overline{\text{sg}}$ *N* and the P *three, four*, etc., are said to fall into subset PL(URAL). (Since DU and PL imply $\overline{\text{SG}}$, items will be entered as DU or PL rather than as $\overline{\text{SG}}$ DU, $\overline{\text{SG}}$ PL, in the listing of forms below.)

When an *N* set whose members are in cross-reference with some member of X includes only sg *N* or only $\overline{\text{sg}}$ *N*, it is called

[1] The representation of phonemic segments and tonal features used here is as described in the preceding paper in this series, Arizona Tewa I: Phonemes, IJAL 25.1–7 (1959). Space, which is used to separate morphological words in the Tewa examples given below, has no phonological referent; nor has hyphen, which is used to indicate some (not all) morpheme boundaries.

Hereafter every morph ending in a vowel or vowel cluster and appearing immediately before a morph whose initial phoneme is a nasal consonant is written, in that position, with final nasal or oral vowel(s) according to whether other members of the same morpheme end in nasal or oral vowel(s) on those occasions when they are not in immediate juxtaposition with nasal consonants.

[2] Herein 'x/y' = 'either x or y.'

[3] Given: x co-occurs with m; if for x there is a y such that the substitution of y for x, all other things being equal, necessitates the substitution of n for m, then x and m are said to be in cross-reference.

a q *N* set; when such an *N* set includes both sg *N* and $\overline{\text{sg}}$ *N*, it is called a u *N* set.

Members of X are listed below in sections **9** and **10** (sets (1) through (10)).[4] Each X is shown segmented into its constituent morphs. Segmentation of these forms offers many alternatives, and the one adopted here could be replaced by others.

Some V combine only with those members of X, called st(ative) X, which are listed below under (1) and (2); such V are called st V. Some V combine only with those members of X, called ac(tive) X, which are listed under (3) through (10); such V are called ac V. Some members of V combine with all members of X; such V are called st ac V.

Those members of ac V which can occur in combination with ac X listed under (3) through (5) are called w V. These appear to have a meaning in common which is as follows: *action which can be (but is not necessarily always) directed toward living being.* Those members of ac V which can occur in combination with members dó- and náá- of set (6) are called z V. These appear to have a meaning in common which is as follows: *action which can be directed only against non-living being.*

9. The members of st X fall into two subsets on the basis of differing combinatorial possibilities with following V themes. The two subsets are described separately below, under paragraphs (1) and (2). The members of each subset are listed, segmented into constituent morphs. Examples illustrating the distribution of each X are given. (In what follows, *p* = any one of the persons (1st, 2d, 3d), and *n* = any one of the numbers (sg, du, pl).)

(1) *p n* RECIPIENT. Each member of the subset so designated is in number cross-reference with the following V theme on those occasions when the V theme is one of those which show alternate forms for sg/du versus pl. X labelled sg or du combine with an alternant of the V theme which differs in shape from that found in combination with X labelled pl. Every member of set (1), and no other member of X, includes as one of its constituents a morpheme, labelled rc, whose presence signifies that the person-and-number marked by the accompanying X-constituents is in the state referred to by the accompanying V theme. For each member of subset (1) there is a q *N* set such that the individual X member is, on given occasions, in cross-reference for person and number with some member of its q *N* set. The *N*-set member refers to the one who is in the state specified by the accompanying V theme. The individual members of set (1) are listed immediately below.

1ST SG ʔo-ˈ[5] (1st(-)sg-rc): naa ʔo-ƙó[6] *I lay, was lying.*

2D SG ʔụ-Ø-ˈ (2d-sg-rc): ʔụ we-ʔụ-ƙó-dí[7] *you sg were not lying.*

3D SG na-ˈ (3d(-)sg-rc): heʔ na-ƙó *he was lying.*

1ST DU g-a-ˈ (1st-du-rc): naʔin wíƙíńdí ga-ƙó *we two were lying.*

2D/3D DU d-a-ˈ (2d/3d-du-rc): ʔụ-n wíƙíńdí da-ƙó *you two were lying*; he-ʔin wíƙíńdí da-ƙó *they two were lying.*

1ST PL g-i-ˈ (1st-pl-rc): na-ʔin poyedi gi-ƙwóń[8] *we three were lying.*

2D PL ʔ-i-ˈ (2d-pl-rc): ʔụ-n poyedi ʔí-ƙwóń *you three were lying.*

3D PL d-i-ˈ (3d-pl-rc): he-ʔin poyedi dikwóń *they three were lying.*

(2) *p n* POSSESSOR. No member of subset (2) is in number cross-reference with the following V theme (cf. subset (1) above); that is, any member of (2) can occur in

[4] A given X can be assigned either to set IMPERATIVE or to set INDICATIVE on the basis of the form of the Verb themes with which it combines; only indicative X are considered in this paper.

[5] Low tone, ordinarily unmarked, is marked in the listing of segments. The phonological locus of a tone whose symbol is written without a letter is the preceding vowel.

[6] ƙó *lie, be inanimate*, one of the sg/du st forms of a st ac V.

[7] we- . . . -dí *negative.*

[8] ƙwóń, the pl counterpart of ƙó (footnote 6).

combination with either sg/du V themes or pl V themes. Every member of (2), and no other member of X, includes as one of its constituents a morpheme, labelled ps, whose presence signifies that the person-and-number marked by the accompanying X-constituents possesses something which is in the state referred to by the accompanying V theme. For every member of (2) there is a cross-reference q *N* set. The *N*-set member refers to the possessor. The members of set (2) are listed and exemplified immediately below.

1ST SG d-i-'ń (1st-sg-ps): naa díń-ƙó *I have it* (= *something sg/du inanimate*); cf. naa díń-ƙwóń *I have them* (= *something pl animate/inanimate*[9]);.

2D SG ʔų-Ø-'H[10] (2d-sg-ps): ʔų we-ʔų?-ƙó-dí *you sg don't have it.*

3D SG ʔúù (3d(-)sg(-)ps): he? ʔúų-ƙó *he has it.*

1ST DU g-ę-'H (1st-du-ps): na-ʔin wíƙíńdí gę́?-ƙó *we two have it.*

2D DU d-ę-'H (2d-du-ps): ʔų-n wíƙíńdí dę́?-ƙó *you two have it.*

3D DU d-ę-'ń (3d-du-ps): he-ʔin wíƙíńdí dę́ń-ƙó *they two have it.*

1ST PL g-i-'H (1st-pl-ps): na-ʔin poyedi gí?-ƙó *we three have it.*

2D PL ʔ-o-'H (2d-pl-ps): ʔų-n poyedi ʔó?-ƙó *you three have it.*

3D PL d-óó (3d-pl(-)ps); he-ʔin poyedi dóó-ƙó *they three have it.*

10. We turn now to ac X.

Certain members of ac X are in cross-reference with two sets of *N*. The members of one of the *N* sets associated with a given X mark actor; those of the other mark direct goal. Two-*N* ac X fall into various subsets on the basis of certain features of the *N* sets with which they stand in cross-reference. (Except as explicitly indicated to the contrary below, accompanying *N* sets consist of *N* words conforming to the following patterns: N-sg, N-$\overline{\text{sg}}$.)

(3) *p* ACTOR, *p n* GOAL. For each member of (3) there is a u *N* set and a q *N* set. The individual u *N* conforms to the following pattern: N-sg/$\overline{\text{sg}}$-di; -di is a suffix marking that the *N* in which it participates refers to the actor. The members of each q *N* set mark direct goal. The order is u *N* + q *N*. members of set (3) co-occur with w V only.

1ST ACTOR, 2D SG GOAL w-í-Ø (2d-1st-sg): naa-di ʔų wí-tay[11] *I know you sg*; na-n-di ʔų wí-tay *we know you sg.*

3D ACTOR, 2D SG GOAL w-óó-Ø (2d-3d-sg): he?-di ʔų wóó-tay *he knows you sg*; he-?in-di ʔų wóó-tay *they know you sg.*

1ST/3D ACTOR, 2D DU GOAL w-o-béń (2d-1st/3d-du): naa-di ʔų-n wíyé wobéń-tay *I know you two*; na-n-di ʔų-n wíyé wobéń-tay *we know you two*; he?-di ʔų-n wíyé wobéń-tay *he knows you two*; he-?in-di ʔų-n wíyé wobéń-tay *they know you two.*

1ST/3D ACTOR, 2D PL GOAL w-o-béé (2d-1st/3d-pl): naa-di ʔų-n poye wobéé-tay *I know you three*; na-n-di ʔų-n poye wo-béé-tay *we know you three*; he?-di ʔų-n poye wobéé-tay *he know you three*; he-?in-di ʔų-n poye wobéé-tay *they know you three.*

3D ACTOR, 3D SG GOAL ?-óó-Ø (3d-3d-sg): he?-di he? ?óó-tay *he know him*; he-?in-di he? ?óó-tay *they know him.*

3D ACTOR, 3D DU GOAL ?-o-béń (3d-3d-du): he?-di he-?in wiye ?obéń-tay *he knows them two*; he-?in-di he-?in wíyé ?obéń-tay *they know them two.*

3D ACTOR, 3D PL GOAL ?-o-béé (3d-3d-pl): he?-di he-?in poye ?obéé-tay *he knows those three*; he-?in-di he?-in poye ?obéé-tay *they know those three.*

(4) *p n* ACTOR, *p n* GOAL. For each member of (4) there are two q *N* sets. The members of one of the *N* sets in cross-reference with a given member of set (4) mark actor; those of the other mark goal. The members of one of the q *N* sets in cross-reference with a given $\overline{\text{sg}}$ member of set (4) optionally dis-

[9] ƙwóń is also the pl counterpart of ʔéń *sit, be animate*; hence, the ambiguity in translation.

[10] H = h under certain circumstance, ? under others.

[11] tay *know*, ac V.

play -di *actor*. Members of set (4) co-occur with w V only.

1ST SG ACTOR, 3D SG GOAL d-ó-Ø (1st-sg(-)3d-sg): na he? dó-tay *I know him.*

1ST SG ACTOR, 3D DU GOAL d-ò-béń (1st-sg(-)3d-du): he-n wíyédí teen-in[12] dobéń-múń[13] *I saw those two men*; naa-di dobéń-múń *I saw them du.*

1ST SG ACTOR, 3D PLURAL GOAL d-ò-béé (1st-sg(-)3d-pl): he-n poyedi seen-in dobéé-múń *I saw those three men*; naa-di dobéé-múń *I saw them pl.*

2D SG ACTOR, 3D SG GOAL náá-Ø (2d(-)sg-(-)3d-sg): ?ųhe? náá-tay *you sg know him.*

2D SG ACTOR, 3D DU GOAL mà-béń (2d(-)sg-(-)3d-du): di he-n wíyédí seen-in mabéń-múń *did you see those two men?* di ?ų-di mabéń-múń *did you see them du?*

2D SG ACTOR, 3D PL GOAL mà-béé (2d(-)sg-(-)3d-pl): di he-n poyedi seen-in mabéé-múń *did you see those three men?* di ?ų-di mabéé-múń *did you see them pl?*

(5) *p* ACTOR, *p* GOAL. For the single member of (5) there are two u *N* sets. The members of one of these *N* sets always display -di *actor*; the members of the other mark goal. The member of set (5) co-occurs with w V only.

2D/3D ACTOR, 1ST GOAL d-í (2d/3d-1st): ?ų-di naa dí-tay *you sg know me*; ?ų-n-di naa dí-tay *you s̄g̱ know me*; ?ų-di na-?in dí-tay *you sg know us*; ?ų-n-di na-?in dí-tay *you s̄g̱ know us*; he?-di naa dí-tay *he knows me*; he-?in-di naa dí-tay *they know me*; he?-di na-?in dí-tay *he knows us*; he-?in-di na-?in dí-tay *they know us.*

(6) *p n* ACTOR, *p* GOAL. For each member of (6) there is a q *N* set and a u *N* set. The members of the u *N* set (it is identical for all members of (6)) mark goal; the members of the various q *N* sets mark actor (these, however, do not display -di *actor*).

The two members of set (6) listed first below co-occur only with z V.

1ST SG ACTOR, 3D GOAL d-ó (1st-sg(-)3d): na he? dó-paa[14] *I built it*; na he-?in dó-paa *I built them.*

2D SG ACTOR, 3D GOAL náá (2d(-)sg(-)3d): ?ų he? náá-paa *you built it*; ?ų he-?in náá-paa *you built them.*

The remaining members of (6) combine with ac V in general.

3D SG ACTOR, 3D GOAL máń (3d(-)sg(-)3d): he? he? máń-tay *he knows him*; he? he-?in máń-tay *he knows them.*

1ST DU ACTOR, 3D GOAL ?-a-'ń (1st-du-3d): na-?in he? ?áń-tay *we du know him*; na-?in he-?in ?áń-tay *we du know them*; na-?in wíkíndí ?áń-tay *we two know him/them.*

2D/3D DU ACTOR, 3D GOAL d-ę-'ń (2d/3d-du-3d): ?ų-n he? dę́ń-tay *you du know him*; ?u-n he-?in dę́ń-tay *you du know them*; ?ų-n wíkíndí dę́ń-tay *you du know him/them*; he-?in he? dę́ń-tay *they du know him*; he-?in he-?in dę́ń-tay *they du know them*; he-?in wíkíndí dę́ń-tay *they two know him/them.*

1ST PL ACTOR, 3D GOAL ?-i-'í (1st-pl-3d): na-?in he? ?íí-tay *we pl know him*; na-?in he-?in ?íí-tay *we pl know them*; na-?in poyedi ?íí-tay *we three know him/them.*

2D PL ACTOR, 3D GOAL ?-o-'bíń (2d-pl-3d): ?ų-n he? ?óbíń-tay *you pl know him*; ?ų-n he-?in ?óbíń-tay *you pl know them*; ?ų-n poyedi ?óbíń-tay *you three know him/them.*

3D PL ACTOR, 3D GOAL d-i-'í (3d-pl-3d): he-?in he? díi-tay *they pl know him*; he-?in he-?in díi-tay *they pl know them*; he-?in poyedi dii-tay *they three know him/them.*

Certain members of ac X are in cross-reference with three sets of *N*. For every three-*N* ac X, one of the *N* sets consists of words conforming to the following pattern: N-sg/s̄g̱-bíí-nedi, where -bíí-nedi is a morpheme sequence meaning approximately *on . . .'s behalf*. Such *N* words mark indirect goal; for a given X, the members of the other *N* sets with which it is in cross-reference mark actor and direct goal.

Every three-*N* ac X, and no other member of X, includes as one of its constituents

[12] seen-in *men*, s̄g̱ anim *N*.

[13] múń *see*, ac V.

[14] paa *build, make*, ac V.

a morpheme, labelled ind, whose presence signifies that the direct goal is 3d in person and that the other marked goal is the indirect goal.

Three-*N* ac X combine with ac V in general. They fall into various subsets on the basis of certain features of the *N* sets with which they stand in cross-reference. (As indicated above, the direct goal is always 3d in person; its number is never marked by the members of sets (7)–(9); it will not be mentioned below in the sub-set headings and labels for individual members.)

(7) *p* ACTOR, *p n* IND GOAL. Each member is in cross-reference with the members of two u *N* sets and one q *N* set. One of the u *N* sets, invariably including -di, marks actor; the other u *N* set marks goal; the q *N* set marks indirect goal.

1ST ACTOR, 2D SG IND GOAL w-ɨ-Ø-ń (2d-1st-sg-ind): ʔɥ-bíí-nedi wíń-paa *I/we built it/them for you sg*; naa-di wíń-paa *I built it/them for you sg*; naʔ-in-di wíń-paa *we built it/them for you sg*; heʔ wíń-paa *I/we built it for you sg*; he-ʔin wíń-paa *I/we built them for you sg.*

3D ACTOR, 2D SG IND GOAL w-ó-Ø-ń (3d-1st-sg-ind): ʔɥ-bíí-nedi wóń-paa *he/them built it/them for you sg*; heʔ-di wóń-paa *he built it/them for you sg*; he-ʔin-di wóń-paa *they built it/them for you sg*; heʔ wóń-paa *he/they built it for you sg*; he-ʔin wóń-paa *he/they built them for you sg.*

1ST/3D ACTOR, 2D DU IND GOAL w-ò-béń-Ø (2nd-1st/3d-du-ind): ʔɥ-n-bíí-nedi[15] wobéń-paa *I/we/he/they built it/them for you du*; naa-di wobéń-paa *I built it/them for you du*; aa-ʔin-di wobéń-paa *we built it/them for you du*; heʔ-di wobéń-paa *he built it/them for you du*; he-ʔin-di wobéń-paa *they built it/them for you du*; heʔ wobéń-paa *I/we/he/they built it for you du*; he-ʔin wobéń-paa *I/we/he/they built them for you du.*

[15] ʔɥ-n-bíí-nedi *for you* $\overline{sg}$ should occur in association with number-marking Particles such as wiye *two* and poye *three*; I failed to elicit for such sequences.

1ST/3D ACTOR, 2D PL IND GOAL w-ò-béé-Ø (2d-1st/3d-pl-ind): Substitute béé for béń and *pl* for *du* in the examples given in the paragraph immediately above.

3D ACTOR, 3D SG IND GOAL ʔ-ó-Ø-ń (3d-3d-sg-ind): ʔi-bíí-nedi ʔóń-paa *he/they built it/them for him*; heʔ-di ʔóń-paa *he built it/them for him*; he-ʔin-di ʔóń-paa *they built it/them for him*; heʔ ʔóń-paa *he/they built it for him*; he-ʔin ʔóń-paa *he/they built them for him.*

3D ACTOR, 3D DU IND GOAL ʔ-ò-béń-Ø (3d-3d-du-ind): wíyé kwiyóo-bíí-nedi[16] ʔobéń-paa *he/they built it/them for two women*; heʔ-di ʔobéń-paa *he built it/them for them du*; he-ʔin-di ʔobéń-paa *they built it/them for them du*; heʔ ʔobéń-paa *he/they built it for them du*; he-ʔin ʔobéń-paa *he/they built them for them du.*

3D ACTOR, 3D PL IND GOAL ʔ-ò-béé-Ø (3d-3d-pl-ind): Substitute béé for béń, *pl* for *du*, poye for wíyé, and *three* for *two* in the examples given in the paragraph immediately above.

(8) *p n* ACTOR, *p n* IND GOAL. Each member is in cross-reference with the members of two q *N* sets and one u *N* set. The members of one of the q *N* sets in cross-reference with a given member of set (8) mark actor; those of the other q *N* set mark indirect goal; those of the u *N* set mark direct goal.

1ST SG ACTOR, 3D SG IND GOAL d-ó-Ø-ń (1st-sg(-)3d-sg-ind): ʔi-bíí-nedi dóń-paa *I built it/them for him*; naa dóń-paa *I built it/them for him*; heʔ dóń-paa *I built it for him*; he-ʔin dóń-paa *I built them for him.*

1ST SG ACTOR, 3D DU IND GOAL d-ò-béń-Ø (1st-sg(-)3d-du-ind): wíyé kwiyóo-bíí-nedi dobéń-paa *I made it/them for two women*; naa dobéń-paa *I made it/them for them du*; heʔ dobéń-paa *I made it for them du*; he-ʔin dobéń-paa *I made them for them du.*

1ST SG ACTOR, 3D PL IND GOAL d-ò-béé-Ø (1st-sg(-)3d-pl-ind): Substitute béé for béń, *pl* for *du*, poye for wíyé, and *three* for *two* in the examples given in the paragraph immediately above.

[16] kwiyóo *women*, $\overline{sg}$ an *N*.

2D SG ACTOR, 3D SG IND GOAL má-Ø-ń (2d(-)sg(-)3d-sg-ind): di ʔi-bíí-nedi máń-paa *did you sg build it/them for him?* di ʔų máń-paa *did you sg build it/them for him?* di heʔ máń-paa *did you sg build it for him?* di he-ʔin máń-paa *did you sg build them for him?*

2D SG ACTOR, 3D DU IND GOAL mà-béń-Ø (2d(-)sg(-)3d-du-ind): di wíyé kwiyóo-bíí-nedi mabéń-paa *did you sg build it/them for two women?* di ʔų mabéń-paa *did you sg build it/them for them du?* di heʔ mabéń-paa *did you sg build it for them du?* di he-ʔin mabéń-paa *did you sg build them for them du?*

2D SG ACTOR, 3D PL IND GOAL mà-béé-Ø (2d(-)sg(-)3d-pl-ind): Substitute béé for béń, *pl* for *du*, poye for wíyé, and *three* for *two* in the examples given in the paragraph immediately above.

(9) *p* ACTOR, *p* IND GOAL. For the single member of (9) there are three u *N* sets. The members of one of these *N* sets always display -di *actor*; the members of the second mark indirect goal; the members of the third mark direct goal.

2D/3D ACTOR, 1ST IND GOAL d-í-ń (2d/3d-1st-ind): heʔ-di díń-paa *he built it/them for me/us*; he-ʔin-di díń-paa *they built it/them for me/us*; ʔų-di díń-paa *you sg built it/them for me/us*; ʔų-n-di díń-paa *you sg̃ built it/them for me/us*; naa díń-paa *he/they/you built it/them for me*; na-ʔin díń-paa *he/they/you built it/them for us*; heʔ díń-paa *he/they/you built it for me/us*; he-ʔin díń-paa *he/they/you built them for me/us.*

For each of the remaining members of X there is one q *N* set.

(10) *p n* ACTOR. For each member of (10), the members of its q *N* set mark actor. Every member of (10), and no other member of X, displays as one of its constituents a morpheme, labelled rfl, whose presence signifies that the person-and-number marked by accompanying X-constituents is actor and that goal is unspecified or is identical with actor.

1ST SG d-i-ˈí (1st-sg-rfl): naa díí-maaką?o[17] *I'm learning* (= *I'm teaching myself*; cf. dó-maaką?o *I'm teaching him*).

2d sg b-i-ˋ (2d-sg-rfl): di ʔų bi-maaką?o *are you sg learning?*

3D SG ʔ-i-ˋ (3d-sg-rfl): heʔ ʔi-maaką?o *he's learning.*

1ST DU ʔ-a-ˋn (1st-dur-fl): na-ʔin wíkíńdí ʔan-maaką?o *we two are learning.*

2D/3D DU d-ę-ˋn (2d/3d-du-rfl): di ʔų-n wíkíńdí dęn-maaką?o *are you two learning?* he-ʔin wíkíńdí dęn-maaką?o *they two are learning.*

1ST PL ʔ-i-ˈbí (1st-pl-rfl): na-ʔin poyedi ʔíbí-maaką?o *we three are learning.*

2ND PL ʔ-o-ˈbí (2d-pl-rfl): di ʔų-n poyedi ʔóbí-maaką?o *are you three learning?*

3D PL d-i-ˈbí (3d-pl-rfl): he-ʔin poyedi díbí-maaką?o *they three are learning.*

[17] maaką?o *teach*, ac V.

MAZATEC KERNEL CONSTRUCTIONS AND TRANSFORMATIONS

SARAH C. GUDSCHINSKY
SUMMER INSTITUTE OF LINGUISTICS

1. Definitions
2. Kernel constructions
2.1. Class membership
2.2. Class occurrence
3. Transformations
3.1. Within a sentence
3.2. Sentence to sequence sentence
3.3. Sentence to part of sentence

1. This paper offers a brief sketch of the salient features of the kernel constructions and transformations of Mazatec, as in illustration of principles developed by Zellig Harris.

Harris defines transformations:

"If two or more constructions (or sequences of constructions) which contain the same n classes (whatever else they may contain) occur with the same ntuples of members of these classes in the same sentence environment . . . , we say that the constructions are transforms of each other, and that each may be derived from any other of them by a particular transformation. For example, the constructions N V v N (a sentence) and N's V*ing* N (a noun phrase) are satisfied by the same triples of N, V, and N (*he, meet, we*; *foreman, put up, list*; etc.); so that any choice of members which we find in the sentence we also find in the noun phrase and vice versa: *He met us, his meeting us . . . ; The foreman put the list up, the foreman's putting the list up . . .* Where the class members are identical in the two or more constructions we have a reversible transformation, and may write e.g. N_1 v V $N_2 \leftrightarrow N_1$'s V*ing* N_2 and the set of triples for the first = the set for the second)."[1] He defines the kernel:

"The kernel is the set of elementary sentences and combiners, such that all sentences of the language are obtained from one or more kernel sentences (with combiners) by means of one or more transformations. Each kernel sentence is of course a particular construction of classes, with particular members of the classes co-occurring."[2]

[1] Zellig S. Harris, Co-occurrence and Transformation in Linguistic Structure, Language 33.288 (1957).

[2] Ibid. p. 335.

The kernel of Mazatec[3] grammar is described in **2**, and the major transformations of Mazatec in **3**. In both these sections the more intricate details have been eliminated, e.g., by limiting the discussion of verb constructions to those whose subjects are third or fourth persons and whose objects, if any, are third person. It is expected that loss in completeness and detail will be more than balanced by a gain in clarity, especially for the reader who is not familiar with Mazatec.

2. The kernel constructions are constituted of word and morpheme classes. The membership of these classes is described in **2.1**, and the constructions themselves in **2.2**.

2.1. The fifteen class[4] symbols used in this sketch (not an exhaustive list for Mazatec) are V (verb), R (relational verb), E (equational verb), N (noun), -le[4] (object enclitic), A (attributive), D (demonstrative), Q (quantifier), d (deictic), T (temporal), L (locational), l (locational introducer), P (relative and interrogative pro-forms), C (conjunction), and I (intonational enclitic).

2.1.1. V includes simple verbs, compound verbs, phrases of auxiliary plus verb, and

[3] Mazatec is a language of Mexico. The data on which this paper is based are from the dialect of Huautla de Jiménez. I am indebted to Eunice V. Pike and George and Florence Hansen Cowan for text and grammatical materials.

[4] The present discussion is limited to that general description of the membership of these classes essential for an understanding of the constructions. The details of the diagnostic environments by which these classes were defined, and of the morpheme classes which are included in the complex members are outside the scope of this paper.

phrases of one or more attributives plus verb.

All verbs are marked for person-of-subject. Only two persons are of concern here, since the material is limited to subjects which are third person (he, she, it, they) or fourth person (*indefinite* as 'they' in 'They don't make high shoes any more,' often translated in English as a passive). Neither third nor fourth person is marked by the fused tone-vowel markers characteristic of first and second person.[5] They are differentiated morphologically only in those paradigms in which person-of-subject is marked in the stem as well as in the fused endings: the fourth person has the same stem as first and second person plurals. Third and fourth person are always differentiated syntactically in that any third person verb may co-occur with a free noun subject, whereas a fourth person verb never co-occurs with a free noun subject. Subject markers are illustrated in the following paradigms in the timeless aspect; si^{43}čhą^{13} *I cook* (first person stem si^{43}; first person s. fused ending -a^{3}), ni^{2}čhąį^{13} *you s. cook* (second person stem ni^{2}, second person s. fused ending -i^{3}) ni^{2}čhąǫ^{13} *you pl. cook* (plural stem ni^{2}; second person pl. fused ending o^{3}), si^{1}čhą^{1} *he cooks* (third person stem si^{1}; third person zero ending), ni^{2}čhą^{1} *it is cooked* or *'they' cook* (plural stem ni^{2}; zero ending).

A few verbs—usually those whose first stem has initial v—have a special stem for fourth person: e.g., va^{3}te^{1}nta^{1} *he baptizes*, va^{3}te^{2}ntao^{13} *you pl. baptize*, but sa^{3}te^{2}nta^{1} *'they' baptize*, or *is baptized*.

Simple verbs include such items as: ve^{43} *he knows*, thį^{1} *there are*, vhi^{2} *he goes*, va^{3}ce^{3} *he buys*.

Compound verbs include: verb stem plus noun stem, as v$^{?}$e^{1}c$^{?}$oa^{3} *he begs* (v$^{?}$e^{1} *he hits*, c$^{?}$oa^{3} *his mouth*); verb stem plus attributive, as v$^{?}$e^{1}nta^{3} *he builds, makes* (v$^{?}$e^{1} *he hits, places*, nta^{3} *good*); verb stem plus locational, as v$^{?}$e^{1}hį^{43} *he stirs* (v$^{?}$e^{1} *he hits, places*, hį^{43} *in, among*);[6] verb stem plus verb stem, as v$^{?}$e^{1}cao^{3} *he scatters it* (v$^{?}$e^{1} *hit, place*, cao^{3} *it falls and scatters*); verb stem plus quantifier, as si^{1}hnko^{3} *he completes* (si^{1} *causative* < s$^{?}$į^{1} *he does, makes*, hnko^{3} *one*).[7]

There are a variety of verb auxiliaries which may be prepósed or fused to the verb stem.[8] These include: independent verbs, as vhi^{2} *he goes* in vhi^{2} si^{1}ša^{1} *he goes to work*; independent particles, as khe^{2} *not yet* in khe^{2} si^{1}ša^{1} *he doesn't work yet*; bound elements, as ti^{1} continuative in ti^{1}si^{1}ša^{1} *he is working*; and elements which may be either bound, as ki^{3} *completed* in ki^{3}si^{43}ša^{1} *he worked* or fused as ki^{43} *he went* (< ki^{3} completed plus vhi^{2} *he goes*).

V includes phrases of one attributive plus verb, as nta^{3} vhi^{2} *he goes well*, ša^{1}ti^{1} vhi^{2} *he goes fast*; or of more than one attributive plus verb, as khai^{1}nka^{3} nta^{3} vhi^{2} *he goes very well*.

2.1.2. R includes a number of simple relational verbs among which are: khi^{3} *has the appearance of* (*used of things or people*), čǫ^{3} *has the appearance of* (*used of places or weather*), nhę^{3} *has the odor of*, thį^{1} *exists, is*.

These forms, like V stems are marked for person; a few of them (e.g., čǫ^{3} *places or weather have the appearance of*) occur in the

[5] See Kenneth L. Pike, Tone Languages: A Technique for Determining the Number and Type of Pitch Contrasts in a Language, with Studies in Tonemic Substitution and Fusion (Ann Arbor, 1948), pp. 106–110 for a description of first, second, and third person subject markers.

[6] This type of compound appears similar to the construction resulting from the fusion of L to the V as described in **3.1.1.4**, but differs from that construction in that it is not a transform of locational phrase plus verb.

[7] Compounds of si^{1}- *causative* with non-verbal second main stems appear similar to the construction si^{1}- *causative* plus verb stem discussed in **3.1.1.3**, but differ in that the non-verbal second stem cannot occur alone as a predicate, whereas the verbal stem does.

[8] See Pike, op. cit. p. 136–7 for a more detailed discussion of auxiliaries and stem changes marking aspect.

third person only.[9] Relational verbs do not occur with auxiliaries.[10]

2.1.3. E, the class of equational verbs, has only two members: ni^{1} *is* and li^{2} . . . hį^{2} *is not*. These are not marked for person nor do they occur with auxiliaries.

2.1.4. N includes simple nouns, compound nouns, phrases with demonstrative and/or deictic plus noun, and phrases of two nouns.

Examples of simple nouns are ti^{34} *boy*, na^{3}nta^{13} *water* ši^{3}kha^{13} *skunk*.

Compound nouns include: noun plus noun, as na^{4}ši^{4}na^{3}nta^{13} *village* (na^{4}ši^{4} *cliff*, na^{3}nta^{13} *water*); noun plus verb, as khoa^{4}vi^{3}šą^{34} *marriage* (khoa^{4} *abstract thing*, vi^{3}šą^{3} *he marries*); noun plus attributive na^{4}ča^{4}ni^{23} *a certain fruit* (na^{4}ča^{4} *banana*, ni^{2} *red*).

Phrases of noun with demonstrative and/or deictic include: demonstrative plus noun, as he^{2} šti^{34} *these children*; noun plus deictic, as) sti^{3}-vi^{4} *children here*; demonstrative plus noun plus deictic, as he^{2} šti^{34}-vi^{4} *these children here*.

In phrases of two nouns the first noun is head of the construction, as nt?ia^{3} la^{4}hao^{4} *stone house* (nt?ia^{3} *house*, la^{4}hao^{4} *stone*). Phrases of noun plus noun have two stresses, one on each noun, in contrast to compounds of noun plus noun which have a single stress on the final syllable.

2.1.5. -le^{4} *third person object* is the only member of the class of object enclitics which has relevance for this paper, since the discussion of constructions including objects has been limited to those having third person objects. An example of -le^{4}: ki^{3}ni^{3}čhą^{1}-le^{4} ya^{1}sį^{3} *her neck was heated* or *'they' heated her neck* (ki^{3}ni^{3}čhą^{1}-le^{4} *'they' heated it* or *it was heated*, ya^{1}sį^{3} *her neck*).

2.1.6. A includes all attributives. There are a number of partially overlapping subclasses: those which occur attributive only to nouns, as ni^{2} *red* in na^{3}šo^{1} ni^{23} *red flower*; those which occur attributive to both nouns and verbs, as čo^{4}ta^{4} nta^{34} *good people* and nta^{3} ki^{3}s?į^{43} *he did well*; those which are attributive to both verbs and other attributives, as n?ią^{1} si^{1}ša^{1} *he works hard* (n?ią^{1} *hard*) and n?ią^{1} nta^{3} si^{1}ša^{1} *he works very well* (n?ią^{1} *very*).

2.1.7. D includes a few simple demonstratives, as he^{23} *he, this*, koi^{34} *this*; and a few complex ones, as kna^{3}yi^{3}he^{34} *all (things)*, nka^{3}c?i^{34} *all (people)*. The demonstrative hnko^{3} *a, one* is homophonous with the quantifier hnko^{3} *one*, but distinguished from it by distribution.

2.1.8. d includes two deictic enclitics: -vi^{4} *this, here*, and -ve^{4} *that, there*.

2.1.9. Q includes all of the numerals—hnko^{3} *one*, hao^{3} *two*, etc.—and other quantifiers such as nkhį^{2} *many*, čoa^{3} *few*.

2.1.10. T includes simple temporals, as nčąǫ^{3} *tomorrow*, nko^{2}hña^{4} *yesterday*; and temporal phrases, as hnko^{3} no^{13} *one year*, koi^{3} ni^{4}čhį^{43}-ve^{4} *that day*.

2.1.11. L includes a small number of locationals: e.g., -hį^{43} *in, among*, -hǫ^{2} *on the surface of*, t?ą^{2} *above*, nki^{3} *under*. Some of these are always bound, others sometimes occur as free forms.[11]

[9] There is at least one instance of a fourth person V also occurring as an R: khi^{3}ne^{3} yao^{3} *he eats meat*, či^{3}ne^{32} yao^{34} *we inc. eat meat*, či^{3}ne^{3} yao^{34} *meat is eaten* are all constructions of V N, but nta^{3} či^{3}ne^{3} yao^{34} *the meat is delicious* is a case of A R N.

[10] A rare exception may be the occurrence of a free auxiliary particle preceding a complement which in turn precedes R as khe^{3} *not yet* in khe^{2} nta^{3} čǫ^{3} ni^{13}?ya^{34}. *The house does not yet look good.*

[11] For a discussion of the locationals which occur as last main stem of compound verbs see George M. and Florence Hansen Cowan, Mazateco: Locational and Directional Morphemes, Aboriginal Linguistics 1.1-9 (1947).

2.1.12. l includes four locational introducers: ʔi[4] *here*, ya[4] *there*, ha[4] *place*, nka[3] (meaning vague and uncertain).

2.1.13. P is a class of relative and interrogative pro-forms: ʔya[3] *who*, ʔya[1] *who?*, jme[3] *what*, jme[1] *what?*, jña[3] *where*, jña[1] *where?*, kʔia[4] *when*, kʔia[1] *when?* and others.

2.1.14. C is a class of conjunctions including ši[3] *that*, kʔoa[4] *and*, nka[4] *because*, ca[2] *if*, and others.

2.1.15. I is the class of intonational enclitics including -la[4] *probably*, -ʔni[3] *emphasis*, and the like.

2.2. The kernel constructions include six sentence constructions and four non-sentence constructions.

2.2.1. There are two sentence constructions with V, three with R, and two with E.

N V (noun subject, verb): ya[13] ki[3]ska[43] *the tree fell*; na[4]hča[13] ti[1]nčoa[2] *grandmother is coming*.

(N) V N (noun subject, verb, noun object): ma[3]yo[23] va[3]te[3]ča[3] ya[54]nko[4] *the boy-officials sweep the church*; Eduarɑɑ ka[2]va[3]ce[3] na[4]hno[4] *Edward bought tobacco*. In this formula the first N (indicating the subject) is in parentheses because with fourth person (indefinite) subject, no free noun subject may occur, but in terms of possible transformations the sentences with fourth person subjects are not essentially different from sentences with third person subjects: sʔe[43]ne[2] ka[3]vhe[23] *the coffee is pounded* or *'they' pound the coffee*.

A R N (attributive complement, relational verb, noun object): ni[2] khi[3] na[3]šo[13] *the flower appears red*; čʔao[3] čǫ[3] hña[1] *the weeds (wild growth) are ugly*.

N R N (nominal complement, relational verb, noun object): nta[1]ti[23] nhę[3] ncha[4] *his hands smell like kerosene*.

Q E N (quantifier, relational verb—ma[3]ni[3] *only*—, noun object): hao[2] ma[3]ni[3] šti[34] *there are three children*; nkhį[2] ma[3]ni[3] co[3]hmi[23] *many things*.

A E N (attributive complement, equational verb, noun object): čʔao[3] ni[1] čo[4]ta[4] *the person is wicked* (literally *ugly*, but ugly in character by contrast with čʔao[3] khi[3] *ugly in appearance*).

N E N (nominal complement, equational verb, noun object): či[4]nka[4] ni[1] čo[4]-vi[4] *this animal is a pig*.[12]

2.2.2. The non-sentence constructions include three instances of a bound element plus noun (object or subject), and one instance of a phrase of locational and/or locational introducer plus noun object.

-ni[3] N (instrumental enclitic, noun object): -ni[3] nco[4]ko[4] *on foot* in the sentence ki[43]-ni[3] nco[4]ko[4] *he went on foot*; -ni[3] ki[4]ča[4]nto[43] *with a machete* in the sentence si[1]kʔę[3]-ni[3] ki[4]ča[4]nto[43] *he kills with a machete*. -ni[3] is always enclitic to the verb stem.

-le[4] N (object enclitic, noun object): -le[4] ti[34] *by the boy* in the sentence šǫ[4] me[3]-le[4] ti[34] *paper is wanted by the boy*, or *the boy wants paper*.

N si[1]- (noun subject, si[1]- *causative*—always occurring as first main stem of the verb): José si[1]- *Joseph causes* in the sentence José si[1]kʔę[3] nça[4]ha[4] *Joseph causes cattle to die* or *Joseph butchers cattle*.

l L N (locational introducer, locational noun object): ha[4]ya[3] či[3]co[34]-ve[4] *inside the boat* in the sentence ki[3]si[43] ka[3]tio[2] ha[4]ya[3] či[3]co[3]-ve[4] *he left it in the boat*.

L N (locational, noun object): ya[43] ntia[42] *in the road* in the sentence ki[3]sʔe[43]nthe[2] ya[43] ntia[42] *he planted it in the road*.

l N (locational introducer, noun object): ya[4] ni[3]ʔya[34]-le[4] *at his house* in the sentence ya[4] ni[3]ʔya[34]-le[4] thį-le[4] šǫ[4] *he has paper at his house*.

3. The list of transformations given here is representative rather than exhaustive. It includes transformations within a sentence

[12] ni[1] in the constructions A E N and N E N optionally occurs as a zero alternant: nta[3] čo[4]ta[4] *people are good*; či[4]nka[4] čo[4] *the animal is a pig*.

structure (**3.1**); transformation of independent sentences to sequence sentences (**3.2**); and transformation of sentences to parts of sentences (**3.3**).

3.1. The transformations within a sentence include the addition of other kernel constructions (**3.1.1**), and transformations of word order (**3.1.2**).

3.1.1. S + X ↔ S. Many complex sentences are derived from the kernel by the simple addition of two or more constructions, with certain restrictions as to order which may be considered as secondary transformations (see **3.1.2**).

3.1.1.1. -ni^{3} N (instrumental enclitic, noun object) may be added to most—but not all—sentences with V: i.e., N V (noun subject, verb) or N V N (noun subject, verb, noun object).

N_1 V + -ni^{3} N_2 → N_1 V-ni^{3} N_2: ti^{34} ti^{1}si^{1}ša^{1} *the boy is working* + -ni^{3} ki^{4}ti^{4}ma^{23} *with a hoe* → ti^{34} ti^{1}si^{1}ša^{1}-ni^{3} ki^{4}ti^{4}ma^{23} *the boy is working with a hoe.*

N_1 V N_2 + -ni^{3} N_3 → N_1 V-ni^{3} N_3 N_2 (with a secondary transformation of order—see the position of N_3): ti^{34} ti^{1}khę^{2} na^{3}hma^{13} *the boy is eating beans* + -ni^{3} ku^{3}ča^{2}ra^{4} *with a spoon* → ti^{34} ti^{1}khę^{2}-ni^{3} ku^{3}ča^{2}ra^{4} na^{3}hma^{13} *the boy is eating beans with a spoon.*

This is a one way transformation since all sentences with -ni^{3} N derive from this transformation, but not all N V or N V N can be subjected to it.

3.1.1.2. -le^{4} N (object enclitic, noun object) can be added to most—if not all sentences with V or R.[13]

[13] -le^{4} N usually translates to English as 'indirect object' as in the illustrations cited. The construction sometimes has sharply different meaning however: ša^{4}?nta^{4} ca^{3}k?e^{1} čhao^{42} *the hen laid eggs* (N V N), but ša^{4}?nta^{4} ca^{3}k?e^{1}-le^{4} čhao^{42} *the hen hit the eggs* (N V + -le^{4} N).

Perhaps such pairs as this should be analysed as containing homophonous V: one of which occurs only in N V constructions, the other only in N V N constructions. In this case one might expect to find a case of N_1 V N_2 + -le^{4} N_3, such as perhaps *ša^{4}?nta^{4} ca^{3}k?e^{1}-le^{4} čhao^{42} nai^{34}-le^{4} *the hen laid eggs for her master.*

N_1 V + -le^{4} N_2 ↔ N_1 V-le^{4} N_2: ti^{34} ti^{1}si^{1}ša^{1} *the boy works* + -le^{4} n?ai^{43}-le^{4} *for his father* ↔ ti^{34} ti^{1}si^{1}ša^{1}-le^{4} n?ai^{43}-le^{4} *the boy works for his father.*

N_1 V N_2 + -le^{4} N_3 ↔ N_1 V-le^{4} N_2 N_3: co^{2}ti^{34} ti^{1}si^{1}te^{43} nio^{4} *the girl is making corn-cakes* + -le^{4} n?ai^{43}-le^{4} *for her father* ↔ co^{2}ti^{34} ti^{1}si^{1}te^{43}-le^{4} nio^{4} n?ai^{43}-le^{4} *the girl is making corn-cakes for her father.*

A R N_1 + -le^{4} N_2 ↔ A R-le^{4} N_2 N_1 (or A R-le^{4} N_1 N_2):[14] nta^{3} čǫ^{3} nt?ia^{3} *the house looks good* + -le^{4} co^{2}ti^{34} *to the girl* ↔ nta^{3} čǫ^{3}-le^{4} nt?ia^{3} co^{2}ti^{34} (or nta^{3} čǫ^{3}-le^{4} co^{2}ti^{34} nt?ia^{3}) *the house looks good to the girl.*

3.1.1.3. N si^{1}- (noun subject, causative V stem) can be added to any sentence with a V: i.e., N V (noun subject, verb) or N V N (noun subject, verb, noun object).[15]

N_1 V + N_2 si^{1} ↔ N_2 si^{1}-V N_1: nça^{4}ha^{4} m?ę^{43} *the cattle die* + José si^{1}- *Joseph causes* ↔ José si^{1}k?ę^{43} nça^{4}ha^{4} *Joseph kills the cattle.* Note that N_2, the subject of si^{1}-, becomes subject of the new sentence, and that N_1, subject of V becomes an object in the new sentence.

N_1 V N_2 + N_3 si^{1}- ↔ N_3 si^{1}-V N_2 N_1: ti^{34} ti^{1}khę^{2} nio^{4} *the boy is eating corn-cakes* + na^{4}-le^{4} si^{1}- *his mother causes* ↔ na^{4}-le^{4} ti^{1}si^{1}khę^{2} nio^{4} ti^{34} *his mother feeds the boy corn-cakes.*

---

[14] The occurrence of both nouns following R is exceedingly rare in normal Mazatec. Most frequently one or the other occurs as a zero within a non-ambiguous context (see **3.2.1**): e.g., ti^{34} ca^{3}ka^{3}ce^{3} či^{4}nka^{34} *the boy bought a shirt*; nta^{3} khi^{3}-le^{4} *it looked good to him* (not nta^{3} khi^{3}-le^{4} ti^{34} či^{4}nka^{34} nor nta^{3} khi^{3}-le^{4} či^{4}nka^{34} ti^{34} *the shirt looked good to the boy*).

In the data there are a few examples of A R-le^{4} N N, but the order of the nouns does not seem to be rigid.

[15] The addition of si^{1}- to some V involves morphophonemic changes, e.g., v?e^{1}hna^{3} *he lies down.* si^{1}k?e^{1}hna^{3} *he causes him to lie down*, or *lays him down.*

3.1.1.4. There are two ways that a locational phrase may be added to many—but not all—sentences with V: It may be simply added as a modifier to the entire sentence, or the locational (L) may be fused to the verb as a final main stem—in which case l, if it occurs, is lost.

Since there are three types of locational phrases (l N, L N, l L N) and two types of V sentences (N V, N V N) there are six possible combinations. Only a few of these are illustrated here.

N_1 V + l N_2 ↔ N_1 V l N_2: ma²ki⁴na⁴ ki⁴³ *the machine went* + ha⁴nk?a¹³ *into the sky* ↔ ma?ki⁴na⁴ ki⁴³ ha⁴nk?a¹³ *the machine went into the sky.*

N_1 V + l N_2 ↔ N_1 V N_2: čhǫ⁴² ki⁴³ *the woman went* + ya⁴sio³da² *to the city* ↔ čhǫ⁴² ki⁴³ sio³da² *the woman went to the city.*

N_1 V + l L N_2 ↔ N_1 V-L N_2: ma²ki⁴na⁴ ki³ča³ *the machine was lost* + ha⁴hị⁴³ yo³hvi³⁴ *in the clouds* ↔ ma²ki⁴na⁴ ki³ča³hị⁴³ yo³hvi³⁴ *the machine was lost in the clouds.*

N_1 V + L N_2 ↔ N_1 V-L N_2: ti³ ti¹hna³ *the boy is-at* + kao⁴ mi²yo⁴-le⁴ *with his friend* ↔ ti³⁴ ti¹hna³kao⁴ mi²yo⁴-le⁴ *the boy is with his friend.*

3.1.1.5. ?a³ + S ↔ S: Any sentence becomes a yes-no question by the pre-posing of ?a³ *question* (or ?a³ci² if the expected answer is *yes*). This transformation is sometimes accompanied by a secondary transformation of order.

?a³ + N V ↔ ?a³ V N?: ?a³ *question* + ti³⁴ ki⁴³ *the boy went* ↔ ?a³ ki⁴³ ti³⁴ *did the boy go?*

?a³ + N_1 V N_2 ↔ ?a³ V N_2 N_1: ?a³ *question* + ti³⁴ ca³ka³ce³ šǫ⁴ *the boy bought paper* ↔ ?a³ ca³ka³ce³ šǫ⁴ ti³⁴ *did the boy buy paper?*

?a³ + A R N ↔ ?a³ A R N: ?a³ *question* + nta³ khi³ na³hño³⁴ *the cloth looks good* ↔ ?a³ nta³ khi³ na³hño³⁴ *does the cloth look good?*

?a³ci² + N V ↔ ?a³ci² V N: ?a³ci² *question* + ki⁴³ ti³⁴ *the boy went* ↔ ?a³ci² ki⁴³ ti³⁴ *didn't the boy go?*

?a³ci² + N_1 V N_2 ↔ ?a³ci² V N_2 N_1: ?a³ci² *question* + ti³⁴ ca³ka³ce³ šǫ⁴ *the boy bought paper* ↔ ?a³ci² ca³ka³ce³ šǫ⁴ ti³⁴ *didn't the boy buy paper?*

?a³ci² + A R N ↔ ?a³ci² A R N: ?a³ci² *question* + nta³ khi³ na³hño³⁴ *the cloth looks good* ↔ ?a³ci² nta³ khi³ na³hño³⁴ *doesn't the cloth look good?*

3.1.1.6. I + S ↔ S: Any I (intonational particle) may be added to any sentence. It occurs as enclitic to the first stressed syllable.

I + N_1 E N_2 ↔ N_1-I E N_2: la⁴ *probably* + či⁴nka¹ ni¹ čo⁴ *the animal is a pig* ↔ či⁴nka⁴-la⁴ ni¹ čo⁴ *the animal is probably a pig.*

I + N V ↔ N-I V: šo¹ *'they say'* + čo⁴ta⁴ ca³nka³ *the person fled* ↔ čo⁴ta⁴-šo¹ ca³nka³ *they say the person fled.*

3.1.1.7. T + S ↔ S. Temporals can be added to any sentence with secondary transformation of word order. The temporals are usually paired with appropriate aspect auxiliaries: nt?ai⁴ vhi² *now he goes*; nko²hña⁴ ki⁴³ *yesterday he went*; nčąǫ³ koai⁴ *tomorrow he will go.* But since the auxiliaries indicate aspect rather than tense, various combinations can occur: koa³ce³ ti¹vhi² *long ago he was going* (literally *long ago continuative goes*).

T + A R N ↔ A R N T: nko²hña⁴ *yesterday* + nta³ čǫ³ sǫ³?nte³⁴ *the world looks good* ↔ nta³ čǫ³ sǫ³?nte³⁴ nko²hña⁴ *the world was beautiful yesterday.*

T + N_1 V N_2 ↔ T V N_2 N_1: nčąǫ³ *tomorrow* + ti³⁴ koa⁴ce¹ šǫ⁴ *the boy will buy paper* ↔ nčąǫ³ koa⁴ce¹ šǫ⁴ ti³⁴ *tomorrow the boy will buy paper.*

3.1.2. There are a large number of transformations of order resulting in changes in the order of words within sentences. Changes of order may occur in any sentence, regardless of its position in a sequence of sentences, but some changes of order are at least partially conditioned by such position in sequence; in question-answer sequences, for

example, the answer frequently begins with the word which ended the question: ʔa^{3} ca^{3}nka^{3} ti^{34} *did the boy flee?* ti^{34} ca^{3}nka^{3} *the boy fled.* Some transformations of order have already been noted.

The basic order of noun following V is rigid, as follows: O_1, instrumental object (the noun of -ni^{3} N); O_2, direct object (N_2 of N_1 V N_2); O_3, locational objects (N of d D N when D is fused to the verb); O_4, included subjects (N_2 of N_1 si^{1}- + N_2 V); and O_5, indirect object (N of -le^{4} N).

By transformations of order the subject (N_1 of N_1 V, N_1 V N_2, or N_1 si^{1}-) may follow all the object nouns. By other transformations, any of the object nouns may precede V. By further transformation two nouns, with pause between them, may precede V. These transformations are non-exhaustively illustrated as follows:

ti^{34} ki^{43}-ni^{3} nco^{4}ko^{4} *the boy went on foot* (S V-ni^{3} O_1) ↔ ki^{43}-ni^{3} nco^{4}ko^{4} ti^{34} (V-ni^{3} O_1 S) ↔ nco^{4}ko^{4} ki^{43}-ni^{3} ti^{34} (O_1 V-ni^{3} S). čho^{42} ki^{3}choa^{3}-le^{4} tąo^{4} ti^{34} *the woman gave money to the boy* (S V-le^{4} O_2 O_5) ↔ čho^{42}, ti^{34} ki^{3}choa^{3}-le^{4} tąo^{3} (S, O_5 V-le^{4} O_2) ↔ tąo^{4} ki^{3}choa^{3}-le^{4} ti^{34} čho^{42} (O_2 V-le^{4} O_5 S). ti^{3} co^{2}ʔva^{3}hį^{43} na^{3}nta^{1} *the boy swims in water* (S V-L O_3) ↔ co^{2}ʔva^{3}hį^{43} na^{3}nta^{13} ti^{34} (V-L O_3 S) ↔ na^{3}nta^{13} co^{2}ʔva^{3}hį^{43} ti^{34} (O_3 V-L S). José si^{1}kʔę^{3} nča^{4}ha^{4} *Joseph butchers animals* (S si^{1}-V O_4) ↔ si^{1}kʔę^{3} nča^{4}ha^{4} José (si^{1}-V O_4 S) ↔ nča^{4}ha^{4} si^{1}kʔę^{3} José (O_4 si^{1}-V S).

A number of other very detailed transformations of order are omitted here for the sake of brevity.

The problem of transformations of order in sentences with R is considerably complicated by the fact that such sentences only rarely have two nouns following R, and the order appears to be non-rigid—e.g., the informant alternated between nta^{3} čo^{3}-le^{4} so^{3}ʔnte^{3} ti^{34} *the world looked good to the boy* (A R-le^{4} O_2 O_5) and nta^{3} čo^{3}-le^{4} ti^{34} so^{3}ʔnte^{3} (A R-le^{4} O_5 S). Note that the first of these alternatives implies, by analogy with the rigid order in R sentences, that so^{3}ʔnte^{34} *the world* is the object (O^2 or direct object) of khi^{3} *it appears to be,* but the second alternative implies that so^{3}ʔnte^{34} is subject.

3.2. S_1 ↔ S_2: The transformations of independent sentences to sequence sentences include the substitution of pro-forms or zero (**3.2.1**),[16] and the addition of conjunctions (**3.2.2**).

3.2.1. The occurrence of pro-morphemes or zero recurrence of morphemes marks a sequential, non-initial sentence. All pro-forms substitute for an antecedent either in the linguistic context or in the physical or cultural matrix. (e.g., a sentence such as na^{4}šį^{13} ni^{1} he^{23}-vi^{4} *this is a horse,* with pro-N he^{23}, occurs as a sequence sentence, either in a linguistic context in which he^{23}-vi^{4} *this* substitutes for a noun already explicit in the context, or in a physical context which includes the presence of a horse, a picture of a horse, or perhaps a child playing with a stick horse.) There are pro-N, pro-V, pro-L phrase, and pro-T forms.

The most common pro-N is the demonstrative he^{2} *he, this*: ti^{34} ki^{43} *the boy went* hi^{3}čo^{2} ni^{3}ʔya^{34}-le^{4} he^{23}-ve^{4} *he (or that one) arrived at his house.* The other demonstratives are also pro-N forms.

The most common pro-V is sʔį^{1} *do,* čho^{42} ti^{1}si^{1}te^{43} nio^{4} *the woman makes corncakes* kʔoa^{4} co^{2}ti^{34}-le^{4} kʔoa^{4} ti^{1}sʔį^{1} *and thus does her daughter.*

L phrases are pro-ed by l (ya^{4} *there,* ʔi^{4} *here,* hña^{3} *where*): ya^{4} sio^{3}da^{23} ki^{43} čho^{42} *the woman went to the city* ya^{4} ca^{3}ka^{3}ce^{3} na^{3}hño^{34} *there she bought cloth*; ti^{34} ha^{3}ʔai^{3} ʔnte^{34}-vi^{4} *the boy arrived in this land* ʔi^{4}si^{1}ša^{1} *he works here.*

P occur as pro-forms especially in question-answer sequences: kʔia^{1} ki^{43} ti^{34} *when did the boy go?* nko^{2}hña^{4} ki^{43} ti^{34} *the boy went yesterday* here kʔia^{1} substitutes for T nko^{2}hña^{4} *yesterday.* Note (T V N ← N V +

[16] See Harris op. cit. pp. 313-316 for the theoretical justification for this use of zeros.

T the transformation of order by which ti^{34} occurs sentence final).

jña^{1} ki^{43} ti^{34} *where did the boy go?* ya^{4}ni^{3}?ya^{34}-le^{4} ki^{43} ti^{34} *the boy went to his house* (L V N ← N V + L).

?ya^{1} ki^{43} *who went?* ti^{34} ki^{43} *the boy went* (N V).

koi^{3} may substitute for an entire sentence: ki^{43} ti^{34} *the boy went* koi^{3} nka^{4} co^{3}khǫ^{1} *that because he was afraid.*

The commonest pro-forms of all are the zero recurrences of nouns: ?a^{3} he^{3}ki^{3}c?ao^{3} čhǫ^{42} *has the woman ground* [*her corn*] *yet?* he^{3}ki^{3}c?ao^{3} *has ground* (zero occurrence of čhǫ^{42} *woman* as subject). yao^{34} ki^{3}ska^{43} *the meat fell* nia^{21} ki^{3}skoe^{2} *the dog took* (zero occurrence of yao^{3} *meat* as O_2).

3.2.2. Sequential or non-initial sentences may be marked by the pre-addition of C (conjunction), and optionally the occurrence of pro-forms or the zero recurrence of some morphemes as well: ca^{3}ka^{3}ce^{3} nio^{4} k?oa^{4} na^{3}hma^{13} *he bought corn-cakes and beans* (zero recurrence of ca^{3}ka^{3}ce^{3} *he bought* in the second clause). ki^{43} ti^{34} nta^{3}ca^{2} ca^{3}khǫ^{1} *the boy went even though he was afraid* (zero recurrence of ti^{34} *boy* in the second clause).

3.3. Transformations of sentences to parts of other sentences include transformations of sentences to N (**3.3.1**), to T (**3.3.2**), and to L (**3.3.3**).

3.3.1. There are two main transformations by which S ↔ N.

c (nka^{3}) + S ↔ N: nta^{3} khi^{3} na^{3}hño^{34} *the cloth is good* co^{2}ti^{3} ca^{3}ve^{43} nka^{3} nta^{3} khi^{3} na^{3}hño^{34} *the girl saw that the cloth is good* (nka^{3} nta^{3} khi^{3} na^{3}hño^{34} *that the cloth is good* is N_2 in N_1 V N_2 construction). This transformation appears to be limited to the N occurring as O_2, as in this example.

S_1 containing N_i ↔ N_i C (ši^{3}) S_1 minus N_i: nta^{3}khi^{3} šǫ^{4} *the paper looks good* (A R N) ↔ šǫ^{4} ši^{3} nta^{3} khi^{3} *paper that looks good;* this occurs as N in such a sentence as ti^{3} ca^{3}ka^{3}ce^{3} šǫ^{4} ši^{3} nta^{3} khi^{3} *the boy bought paper that looks good* (N V N). A further illustration is: ti^{3} ca^{3}ka^{3}ce^{3} šǫ^{4} *the boy bought paper* (N V N) ↔ ti^{3} ši^{3} ca^{3}ka^{3}ce^{3} šǫ^{4} *the boy who bought paper*; this occurs as N in such a sentence as ki^{43} ti^{34} ši^{3} ca^{3}ka^{3}ce^{3} šo^{4} *the boy who bought paper went* (N V with a transformation of order ↔ V N).

A variation of this transformation occurs with sentences having R or E. N_1 E N_2 ↔ N_2 N_1: š?į^{4} ni^{1} čo^{4}ta^{4} *the person is a man* ↔ čo^{4}ta^{4} š?į^{4} *male person*; this occurs as N in a sentence such as n?įǫ si^{1}ša^{1} čo^{4}ta^{4} š?į^{4} *men work hard* (N V with transformation of order ↔ V N).

A E N ↔ N A: nta^{3} ni^{1} čo^{4}ta^{4} *the people are good* ↔ čo^{4}ta^{4} nta^{34} *good people*; this occurs as N in a sentence such as čo^{4}ta^{4} nta^{34} ha^{3}?ai^{3} *good people came.*

A R N ↔ N A: ni^{2} khi^{3} na^{3}šo^{13} *the flower looks red* ↔ na^{3}šo^{1} ni^{23} *the red flower*; this occurs as N in such a sentence as co^{2}ti^{34} ca^{3}ve^{43} na^{3}šo^{1} ni^{23} *The girl saw the red flowers* (N V N).

There are some pairs of A and N which occur both in A R N and in A E N: e.g., nta^{3} khi^{3} co^{2}ti^{34} *the girl looks good*; nta^{3} ni^{1} co^{2}ti^{34} *the girl is good.* The transformation → N A applies only to the A E N construction in such cases.

Q R N ↔ Q N: hao^{2} ma^{3}ni^{3} čo^{4} *there are two animals* ↔ hao^{2} čo^{4} *two animals*; this occurs as N in such sentences as ti^{34} ca^{3}ka^{3}ce^{3} hao^{2} čo^{4} *the boy bought two animals* (N V N).

There are two more specialized instances of S ↔ N. One of these applies only to the V me^{3} *it is wanted.* This V occurs only in the fourth person, and only in the transform V + -le^{4} N.

Any N_1 V or N_1 V N_2 whose N_1 is identical with the N_1 of me^{3}-le^{4} N_1, may occur as N_3 of the construction me^{3}-le^{4} N_3 N_1 by the zeroing of its own N_1: ti^{34} va^{3}ce^{3} šǫ^{4} *the boy buys paper* (N_1 V N_2) has as N_1 the same N as the N_1 in me^{3}-le^{4} ti^{34} *it is wanted by the boy* (me^{3}-le^{4} N_1). Combining these two results in the sentence me^{3}-le^{4} va^{3}ce^{3} šǫ^{4} ti^{34} *to buy paper is wanted by the boy* (me-le^{4} N_3 N_1).

The second of these special transformations applies only to the V thị^{1} *it exists* or *is owned*. Like me^{3}, thị^{1} occurs only in fourth person and only in the transform V N_1 + -le^{4} N_2 ↔ V-le^{4} N_1 N_2. This construction has a further transformation: V-le^{4} N_1 N_2 ↔ N_1-le^{4} N_2 (-le^{4} in this position being a different morpheme *possessed by*). N_1-le^{4} N_2 in turn functions as N in all constructions. For example: thị^{1}-le^{4} čo^{4} ti^{34} *the boy has animals* ↔ čo^{4}-le^{4} ti^{34} *the boy's animals*, as in nta^{3} khọą^{3} čo^{4}-le^{4} ti^{34} *the boy's animals look good* (A R N).

3.3.2. There are two major transformations by which S ↔ T.

C (nka^{3}, ši^{3}) + S ↔ T: nka^{3} + ti^{34} ca^{3}ka^{3}ce^{3} šọ^{4} *the boy bought paper* ↔ nka^{3} ca^{3}ka^{3}ce^{3} šọ^{4} ti^{34} *when the boy had bought paper* as in the sentence, nka^{3} ca^{3}ka^{3}ce^{3} šọ^{34} ti^{34}, ki^{43} *when the boy had bought paper he went* (T N V with secondary transformations: of order in that the subject ti^{3} *boy* follows its verb; of zeroing in that ti^{34} occurs as subject of ca^{3}ka^{3}ce^{3} *he bought*, but recurrs as a zero subject of ki^{43} *he went*.)

P (k?ia^{4} *when*) C (nka^{3}) + S ↔ T: k?ia^{4} nka^{3} *when* + ti^{34} ha^{3}?ai^{3} *the boy arrived* ↔ k?ia^{4} nka^{3} ha^{3}?ai^{3} ti^{34} *when the boy arrived* (with secondary transformation of order). This occurs as T in such sentences as k?ia^{4} nka^{3} ha^{3}?ai^{3} ti^{34} ca^{3}khę^{2} *when the boy arrived he ate* (T N V with zero occurrence of ti^{34} as N, subject of ca^{3}khę^{2}.)

3.3.3. There is one major transformation by which S ↔ L.

P (hña^{3} *where*) C (nka^{3}) + S ↔ L: hña^{3}nka^{3} *where* + sa^{3}te^{1}na^{3} čo^{4} *'they' sell animals* ↔ hna^{3}kna^{3} sa^{2}te^{1}na^{3} čo^{4} *where 'they' sell animals*: this occurs as L in such sentences as ti^{34} ki^{43} hña^{3} nka^{3} sa^{3}te^{1}na^{3} čo^{4} *the boy went where animals are sold* (N V L).

A COMPARISON OF FIVE SALISH LANGUAGES: III

GLADYS A. REICHARD†

3.5. Continuative intransitive pronouns
3.6. Continuative transitive pronouns
3.7. Suffixes of pronominal reference
3.8. Demonstrative pronouns and articles

3.5. We shall see when taking up the subject of aspects that forms and usage have shifted greatly among the several languages. One feature that remains constant is the differentiation of continuative or subordinating forms from the completive by the nominalizing of the verb by the prefix s-. Here we are concerned with the pronominal elements of such forms. In the Coast languages nominalizing seems to be freer than in the Interior languages, which have a fixed method of treating the pronoun, so that verbs with the completive suffix pronouns of **3.4** may be nominalized by prefixing s-. Some, however, have distinctive pronominal forms which are discussed here.

Edel considers the following Till pronouns, which, though they are subordinating, do not occur with the s- *nominalizer*, as intransitive subordinating suffixes distinct from the completive intransitive. If, however, one assumes that -ga- is a continuative suffix, the pronominal suffixes become comparable to, though not identical with, the pronouns of the completive intransitive (**3.3**). Each of Edel's suffixes is here followed by my suggestion for the reconstruction of the form: 1 -ga, -k < -ga-i; 2 -gas, -gaš < -ga-š; 3 -gas < -ga-s; P1 -git, -kit < -ga-yił; P2 -galala < -ga-yæla; P3 -gas, -ks, -galas < -ga-la-s.

Except for the second person singular and plural, the Cheh continuative intransitive pronominal suffixes seem to be distinct: 1 -anš, -enš; 2 -š; 3-ən; P1 -stawt; P2 -ap; P3 -ilte. There is good evidence to conclude that Cheh -an, -ən is a continuative suffix, but the contractions are still unsubstantiated.

From the few forms available it seems that the S-D intransitive continuative subjects are the same as those of the intransitive completive (**3.3**), as are the CA and Kal, apparent formal differences being due to contraction of s- *nominalizer* and ɪc- *continuative* or other prefixes in the same position.

3.6.1. Continuative transitive pronominal suffixes have the same relative position as those of the completive in Till, Cheh, and S-D, but they have somewhat different forms. The following have been isolated for Till:

Object	Subject
1 -c, -ca > -ʒ, -ʒa	-in
2 -c	-š, -aš
3 -a, -la, -ya	-s, -as
P1 -ila, -la	-git, -kt
P2 -il	-lala
P3 —	-s

In the following paradigm Edel's combinations of continuative object-subject pronouns are followed by my suggested reconstructions. As in the completive, I have isolated the conjugational suffixes -t and -iw, and assume that w absorbs t and c. Cheh -an < Till -in mɪy be a continuative suffix, (which appears here (if it is comparable) only in the first person subject. Outstanding here, as in the other languages, is the third person subject -s. The predominance of a is also of importance; it may be a contracted form of -ga, but it is unlikely.

The Till first conjugation forms are: 1-2, P1-2 -ʒiu < -t-c-in; 1-3 -ta < -t-in (?); 1-P2, P1-P2 -tiwilin < -tiuł-in; 1-P3 -t < -t-in; 2-1 -ʒa-c < -t-c-a-š; 2-3, 2-P3 -ta-š < -t-aš; 2-P1, P2-P1 -tuwila-š < -tiuł-aš; 3-1, P3-1 -ʒas < -c-as; 3-2-c, -ta·s < -c-as; 3-3, 3-P3 -tas < -t-as; 3-P1, P3-P1 -tiwi-la-s < -tiuł-as; 3-P2, P3-P2

-tíuł < -tiuł-as; P1-3, P1-P3 -tgit, -tkt < -t-kit; P2-1 -c-galala, -ʒalala < -c-ga-lala; P2-3 -talála, -tkit; P2-P3 -ta·š, -tkit (?); P3-3 -ta-gala-s; P3-P3 -ta-lala, -tas.

The Till second conjugation forms are: 1-2, P1-2 -win, -witiwilin < -wi-c-n; 1-3 -la, -ya; 1-P2, P1-P2 -wilən, -ya; 1-P3 -la, -ya; 2-1 -wi-šəš, -wi-šəs < -wi-c-š; 2-3, 2-P3 -la-š, -yəš < -wi-la-š; 2-P1, P2-P1 -wila-š; 3-1, P3-1 -wiš-əs, wəš-as < -wi-c-s; 3-2 -wi-s, -wəs < -wi-c-s; 3-3, 3-P3 -la-s, -ya-s, yəs; 3-P1, P3-P1 -wi-s, -(wi-)la-s, -iləwa-s; 3-P2, P3-P2 -wił, -wila-s; P1-3, P1-P3 -igit, -ikt, -likt; P2-1 -wəš-yala, -iwiila; P2-3 -lalala, -yala; P2-P3 -yala; P3-3 -la-s, -ya-s; P3-P3 -yæš.

Cheh combines object-subject suffixes in the continuative as does Till, but the subject suffixes are identical with the intransitive suffixes (**3.5**). The object suffixes are: 1 -cal, -al; 2 -cin, -icin; 3 -ən; P1 -tul, -ol; P2 -cin-ap; P3 -iłte.

Characteristic of this series of pronouns is the fact that the second person plural of both object and subject is the singular person marker plus the second person plural -ap, while the first person plural -stawt, and third person plural -iłte are unrelated to the singulars. Since these pronouns have not been given in combination, they are listed here: 1-2 -ici-anš; 1-3 -it-a·nš, -te·ni-anš; 1-P2 -itul-anš; 2-1 -cal-š; 2-3 -š, -č; 2-P1 -tołš; 3-1 -cal-ən; 3-2 -cin-ən; 3-3 -tən; 3-P1 -tul-en; 3-P2 -cən-ap; P1-3 -stawt.

Full forms of Cheh continuative object-subject suffixes are found in the notebooks preceded by the suffix -šit- *for, as a favor to*; these are presented below in **3.7**.

S-D continuative transitive pronominal suffixes are the same as those of the completive (**3.4**) with the exception of the third person, which is unmarked in the completive, but marked for both subject and object in the continuative. The continuative transitive is formed by prefixing s- *nominalizer* to the completive. The use of -s *third person subject* in the continuative seems to point to the persistence of the possessive and therefore to the nominal character of the continuative verb. The continuative third person object -tʷ is doubtless related to Till -ɣʷ- and Cheh -txʷt, or -txʷ *benefactive* (?) (**3.7**, below). All examples of -tʷ I have found in Tweddell's paper are continuatives, but the oppositions are lacking, so that the conclusion is far from final.

Since the CA continuative is a participial form, the English subject is expressed by the CA possessive pronouns (**3.2**), the English object by the CA intransitive completive subject prefixes (**3.3**), the construction being of the type *you-my . . . -ing* for English *I am . . . ing you*. The pronominal affixes, however, are much obscured because they combine with s- *nom.*-ɪc- *cont.* in complicated ways (CA §334); the significant contractions are given below for convenience. 1-2 kʷi?ʾc- < ku-*you*, hɪn-*my*-s-*nom.*-ɪc-*cont.*; 1-3 hi?ʾc- < hɪn-*my*-s-*nom.*-ɪc-*cont.*; 1-P2 kupi?ʾc- < kup-*you pl.*-hɪn-*my*-s-*nom.*-ɪc-*cont.*; 2-1 čin'i?ʾc- < čin-*I*-in-*your*-s-nom.-ɪc-*cont.*; 2-3 i?ʾc- < in-*your*-s-*nom.*-ɪc-*cont.*; 3-1 či?ʾc- < čin-*I*-s-*nom.*-ɪc-*cont.*; 3-3 ɪc- . . . -s < s-*nom.*-ɪcs-*cont.*- . . . -s *his*; 3-P1 č'ɪc- . . . -s < č-*we*-s-*nom.*-ɪc-*cont.*- . . . -s *his*; 3-P2 kup'ɪc- . . . -s < kup-*you pl.* -s-*nom.*-ɪc-*cont.*- . . . -s *his*; P1-2 kuy'c- . . . -æt < kuᵘ-*you*-s-*nom.*-ɪc-*cont.*- . . . -æt *our*; P1-3 ɪc- . . . -æt < s-*nom.*-ɪc-*cont.*- . . . -æt *our*; P1-P2 kup'ɪc- . . . -æt < kup-*you pl.* -s-*nom.*-ɪc-*cont.*- . . . -æt *our*; P2-1 či?ʾc- . . . -mp < čin-*I*-s-*nom.*-ɪc-*cont.*- . . . -mp *your*; P2-3 ɪc- . . . -mp < s-*nom.*-ɪc-*cont.*- . . . -mp *your*.

It can be demonstrated for several languages that certain forms get so much emphasis that they often become repeated and absorbed in several ways. An example is the Salish stress on s- *nominalizer*. In CA it seems in some forms to have been used twice: its position before the continuative prefix ɪts- is demonstrated by the paradigm, but it also seems probable that ɪc- contains the same s-. Kal has the same structure with resulting es- instead of ɪc-.

Some Kal forms are less contracted than those of CA, and the position of the elements helps in isolating them, for instance, Kal ku-*me* instead of CA -c-. The Kal continuative transitive active voice forms are built on the same principles as those of CA, that is, English object (Kal subject)-English subject (Kal possessive)- aspect-s-nom.-stem-suffixes-cont. suffix. The combinations follow (Kal p. 33; phonetic analysis mine): 1-2 ku-yes- . . . -əm < kʷ-*you*-s-*nom.*-in-*my*-es-*cont.*-s-*nom.*; 1-3 yes- . . . -əm < s-*nom.*-in-*my*-es-*cont.*; 1-P2 pi-yes- . . . -əm < p-*you pl.*-s-*nom.*-in-*my*-es-*cont.*; 1-P3 yes-ʔ . . . -əm (as 1-3 with glottalization of stem vowel); 2-1 kuʔas- . . . -əm < ku-*me*-s-*nom.*-an-*your*-es-*cont.*; 2-3 as- . . . -əm < s-*nom.*-an-*your*-es-*cont*; 2-P1, P2-P1 qeʔes- . . . -ɬəlt (almost certainly of a different series, as is 3-P1, P3-P1 below, cp. the possessive, **3.2**); 2-P3 as-ʔ- . . . -əm < an-*your*-s-*nom.*-es-*cont.*; 3-1 kuʔes- . . . -əm-s < ku-*me*-s-*nom.*-es-*cont.* . . . . -s *his*; 3-2 kʷes- . . . -əm-s < kʷ-*you*-s-*nom.*-es-*cont.* . . . . -s *his*; 3-3 es- . . . -əm-s < s-*nom.*-es-*cont.* . . . . -s *his*; 3-Pl, P3-P1 qeʔes- . . . -ɬel-s (note that although both subject and object are plural the stem vowel is not glottalized); 3-P2 pes- . . . -əm-s < p-*you pl.*-s-*nom*-es-*cont* . . . -s *his*; 3-P3, P3-P3 es-ʔ . . . -əm-s (like 3-3 with glottalized vowel); P1-2 kʷes- . . . -əm < kʷ-*you*-qeʔ-*our*-s-*nom.*-es-*cont.*; P1-3, P1-P3 qeʔ-es- . . . -əm < qeʔ-*our*-s-*nom.*-es-*cont.* (note that stem vowel is not glottalized in pl.); P1-P2 pes- . . . -əm < p-*you pl.*-qeʔ-*our*-s-*nom.*-es-*cont.*; P2-1 kuʔes- . . . -əm-p < ku-*me*-s-*nom.*-es-*cont* . . . -əm-p *you pl.*; P2-3, P2-P3 es- . . . -əm-p < s-*nom*-es-*cont* . . . -əm-mp *your pl.*; P3-1 kuʔes-ʔ . . . -əm-s < ku-*me*-s-*nom.*-es-*cont* . . . . -s *their*; P3-2 kʷes-ʔ . . . -əm-s < kʷ-*you*-s-*nom*-es-*cont.* . . . . -s *their*; P3-P2 pes- ʔ. . . -əm-s < p-*you* pl.-s-*nom*-es-*cont.* . . . . -s *their*.

Noteworthy in this series of compounds are the following:

kʷ- *you object* is phonetically different from ku- *I* (*me* in English construction) as evidenced by the phonetic changes in combination (1-2, 2-1, 3-1, 3-2, P1-2, P2-1, P3-1, P3-2).

The different results of pi- of 1-P2, and pes- of 3-P2, P1-P2 and P3-P2.

kʷ- *you obj.* dominates qeʔ- *our* of P1-2, as compared with P1-P3, P2-P1, P3-P1, so that qeʔ- falls out, unless as is always possible, qeʔ- is of an entirely different order.

Here, as in CA, the third person forms, with zero subject or -s *possessive* (3-3, 3-P3, P2-3, P2-P3) show no evidence of s- *nominalizer* preceding es- *continuative*, and this is also true of CA ıts- continuative (2-3, 3-3, P2-3). In forms like Kal 1-2, 1-P2 it may seem that y is a glide consonant between u and es, i and es. An explanation of the same kind might be given for forms like piyes- (1-P2) and pes- (3-P2, P1-P2, P3-P2), but it would not hold for forms like yes- (1-3, 1-P3) which are initial. Following this argument we shall have to conclude that Kal p-s-*nom.* > p, but the loss of s may be the effect of p followed by s-es-.

Although the reasoning followed in these formulas may seem complicated, it will simplify matters greatly when we explain forms of subordination. Once the continuative as a nominalized form is realized, it is general for many constructions within the same language, and for all the languages. The most problematical point is the presence and position of s-nominalizer, but its presence in the position assumed is confirmed by Kal forms like čin-xʷíst *I walked*, and tá či-s-xʷíst (< čin-s-) *I did not walk*; kʷ-kúp-əm *you are pushing* (*cont. intr.*), and tá kʷ-s-kúp-əm *you are not pushing*. An even more convincing example—and they may be multiplied indefinitely—is qɬ- which Vogt calls the subjunctive: yes-kúp-əm *I am pushing him*, či-qs-kúp-əm (< čin-qɬ-s-kúp-əm) *I wish to push him, I intend to push him* (*intentional-I-pushing-him*). In these constructions the participle eliminates the need for a specific personal object (possibly generalized by the suffix -əm), and indicates the position of the continuative aspect prefix as well as of the nominalizer.

The reconstruction of the pronouns is corroborated by nominal forms with an initial other than s-: čin-es-iləmíxʷ-i *I am acting as chief*; či-qł-iləmíxum (< čin-qł-) *I am going to be chief*; ku?-an-poxút *I am your father, I-am-your-fathering.*

3.6.2. There is no evidence of continuative passive pronouns in Till, a fact easily understood in view of the completive impersonal (third person), probably not a true passive form.

Cheh has a complete set of continuative passive suffixes: 1 -calsč; 2 -təm-č; 3 -sč; P1-łč; P2 -čap; P3 (-sč-yawmš).

S-D probably compares with Till in not differentiating continuative passives.

The passive continuatives in CA and Kal differ from the intransitive continuatives only in having a suffix -əm, pronominal prefixes being the same in position and contraction as those of the intransitive.

3.7. Some suffixes are mainly syntactic; they show a particular kind of relationship between the subject and object—indirect objects, reflexives, and reciprocals. They are stable in form and position, standing just before the object-subject suffixes just discussed, with some of which they combine phonetically. Tweddell and Vogt did not isolate these suffixes; Edel and Boas isolated some of them. Examples of these suffixes were given for CA, and will not be repeated here (CA §§562, 564). The suffixes will be illustrated for the other languages, and when possible, with their phonetic relations with other parts of the verb complex.

Till -šit-, -sət; Cheh, S-D, CA, Kal -šit- *for, for the benefit of* are treated here. The function, position, and meaning of Till -šit, -sət are almost identical with CA -šit. Edel considers -sət- primary, but in her examples some other sibilant, as s, ʒ, c, precedes, and it seems that š of -šit assimilates to the blade sibilant in such circumstances. If such a sibilant follows, -šit is usually retained (Till §51). (The example q'it c-awi-n-íst ʒi vn-šǽnš *then they left him there on a rock* probably does not belong here, -ist being the suffix *rock, surface of round object.*)

The following paradigm results from Edel's examples of Till completive pronominal suffixes preceded by šit (the theoretical reconstruction is mine): 1-2 -s-ʒai < šit-ʒai; 1-3 -asət-i; 2-1 ši·č < -šit-c-š; 2-3 -ši·č < -šit-š; 2-Pl -šitwi·ł-š < šit-uł-š; 3-1 -s-c, -isc < šit-c; 3-2 -s-c, -šic < -šit-c; 3-3 -st, -fišt < -šit-ø; 3-Pl -štiwuł < -šit-uł; Pl-2 -ši·tiwiłyał < -šit-uł-yił; P2-3 -ši·t-iyał < -šit-t-yił; P2-1 -šcyæla < -šit-c-yæla; P2-3 -šti-yæla < -šit-t-yæ la; P3-1 -šc < -šit-c; P3-P1 -šitiuł < -šit-uł; P3-2 -šíʒiu < -šit-c-iu; P3-3 -sətu, -asutu < -šit-iu;

To show how Cheh -šit enters into combination with the other suffixes, paradigms are given below for some completive and continuative object-subject suffixes, with suggested reconstructions.

The Cheh completive pronominal suffixes preceded by -šit are: 1-2 -šičičən; 1-3 -šənčən < -šit-ən-čən; 3-1 -šc, -šic < -šit-c; 3-2 -šice·, -šici < -šit-ce; 3-3 -šən < -šit-ən; 3-Pl -šən-čł < -šit-ən-čł.

The Cheh continuative pronominal suffixes preceded by -šit are: 1-2 -šit-anš, -šic-a·nš, -šicina·nš < -šit-cin-anš; 1-3 -šit-anš; 1-P2 -šitula·nš, -šitulo·nš < -šit-tul-anš; 2-1 -šicalš < -šit-cal-š; 2-3 -šič; 2-Pl -šitolš < -šit-tol-š; 3-1 -šical(ən) < -šit-cal-ən; 3-2 -šicən, -šicinən < šit-cin-ən; 3-3 -šən, -šitən < šit-ən; 3-P1 -šit-uləsuch < -šit-tul-ən; 3-P2 -šicənap < šit-cənap; P1-2 (-šistawt nə́we); P1-3 -šistawt < -šit-stawt; P1-P2 (-šistawt elápa); P2-1 -šica·lap < -šit-cal-ap; P2-3 -šitap, -šičap < -šit-šap; P2-P1 -šitolšap, -šitʷlap < -šit-tol-šap; P3-1 -šicaliłt < -šit-cal-ił(te); P3-2 -šiciniłt < -šit-cin-ił(te); P3-3 -šitiłt < -šit-ił(te); P3-P1 -šitolilt < -šit-tol-ił(te).

The use or non-use of -ən *completive third person object* and its dominance in the completive forms 1-3, 3-P1·are not clear, but they may eventually help to explain the question of the difference between the third person completive objects -n and -t. The

continuative 3-2 alternants -šicən and -šicinən, 3-3 -šən and -šitən, P2-3 -šitap, -šitcap are doubtless further illustrations of the Cheh habit of using either the contracted or full forms.

In Cheh: t-t > t (cont. 1-P2, 2-P1, 3-P1, P2-P1, P3-P1). t-c > c (cont. 1-2, 2-1, 3-1, 3-2, 3-P2, P2-1, P3-1). -t-s > s (cont. P1-2, P1-3, P1-P2). All these contractions are found elsewhere in Salish. Moreover, similar contractions occur in comparable positions with the Cheh verbal suffix -mit *continue, resume an interrupted action*. Cheh t-m > m in s-yá·s-šimalen (< syá·s-šitmalən) *he is working for him*, and t-č > č in it sá·ʔ-šič-čən (< sa·ʔ-šit-č-čən) *I am making it for myself*.

The following S-D examples show some comparable contractions, forms, and function: tágw-šic (< -šid-c) *buy it for me*; ƛu tágw-əši-ci-čəd (< -šid-cid-čəd) *I'll buy it for you*; u-kʷód-ši-čəd (< -šid-t-č) *I am taking it for him*; ƛu əs-kʷód-ši-cid (< -šid-cid) *he will carry it for you*; qə́q'-šid-tubuł *open it for us*; kʷə qə́q'-ši-tubuł-čixʷ *will you open it for us?* (note that here d assimilates to t of -tubuł whereas in the preceding example it remains); u-ʔábš-cid *he gave it to you*; ƛu qə́lq'-əd-šid *he will find it for her*.

Examples from Kal: k'úl'-š-tən (< -št-t) *I made it for him*; yes-k'úl'-š-əm (< -št-əm) *I am doing it for him*; čin-es-kúp-š-i *I am pushing it for someone*; yes-ts-q'úm-št-əm *I am bringing them to him*; tkʷ'-əšíc *he bet with him*; es-tkʷ'-əš-tuwéxʷ *they are making bets, they-are-laying-it-down-for-each-other*.

Till -tx̣ʷ, -x̣ʷ; Cheh -txʷ, and possibly SʾD -tʷ, seem to correspond with CA, Kal -ł *for, in behalf of, instead of* (CA §562). Examples from Till are few, and if -tx̣ʷ or -x̣ʷ is comparable, the meaning given is not conclusive: gu-t'un-óx̣ʷ-i *I'll come back with him*; ga-gáaš-tx̣ʷ-i *I will beat him*; ga-gáaš-tx̣ʷ *he will beat him*.

Examples of Cheh -txʷ: kʷ'ə́p-txʷ-tən *he straightened it for him*; it sa·-txʷ-c *he made it for me*; it ó̓x-txʷ-t t komá·ʔs *he saw his (someone else's) father, he-saw-him-for-him his-father* (used to avoid ambiguity).

Kal -ł seems quite comparable with CA -ł in function and meaning: k'úl'-ł-tən *I did it for him*; kʷé-ł-tən (< kʷen-ł-) *I took it from him, I-held-it-instead-of-him*; kutskʷé-ł-t *take it up for me*; yes-k'úl'-ł-təm *I am doing it for him*; yes-kúp-ł-təm *I am pushing it for him, my-pushing-it-instead-of-his-(pushing-it)*; yes-u·l-ł-tém *I am burning it for him, my-burning-it-instead-of-his-(burning)*; ku?es-púl-ł-təm-s łu? isəm-ém *he is killing my wife, his-killing-for-me my-wife*.

The reflexive is relatively stable in all five languages, though Till has some unexplained forms: Till -dsit (probably -cit), -dit; Cheh -č, S-D -cut, -cud; CA -cut, -cət; Kal -cut. The reflexive has the same position as -šit and -ł, and like them, enters into phonetic combination with surrounding suffixes. Till: as-t-qəs-azít-i *I shall scratch myself*; as-ław-azít-š *you paint your face*; da s-t'au-azít *he burned himself*.

Cheh: xə́ləm-č-la? *get (yourselves) ready*; t'oqʷ'-č *he bit himself*; sə́p-sp-č-a·nš *I struck myself repeatedly*.

In S-D, as in CA, -cut *self*, is preceded by the transitivizer -əd (CA- ən): u-kʷáxʷ-əcut-čəd (< -əd-cut) *I am helping myself*; u-č'áxʷ-ə-cut-čed *I am hitting myself*; u-x̣éq'-ə-cut *it scratched itself*; u-xá?al-id-cut *he does . . . to himself*; ƛu šáb-ə-cud-čəd *I will dry myself*.

Kal: cun-cút *he sought a vision* (cp. CA cun *show*); tkʷ'-ən-scut *he lay down*; łu?n-cút *he wounded himself*; me-m-s-cút *he played*; yə·yə-s-cút *he exerted himself* (yə·yət *be strong*); čin-kʷ'əl'-s-cút *I made something for myself*.

Vogt interprets Kal -i(st) as a reflexive, and realizes it is not the same as -cut (Kal §§163–4). From CA evidence (CA §513) -iʔˈst, -aʔˈts, -æʔᵂst *surface of round object*, Kal -ist is a nominal suffix. I have many examples, Vogt has few. The CA examples show that the position of the suffix is not that of a pronominal, but rather of a nominal suffix. Edel also puts these Till suffixes in the same class. Probably the same ex-

planation holds for Till, especially since some of her examples have -ast, -ist, instead of -ac or -ic.

I find no indication of reciprocals in Till or S-D, but it may be that some of the Till -tu, -tiu forms are to be interpreted as such, since the phonetic relation in CA is close: CA -twiš (-twæš) *each other, one another* (CA §568).

The Cheh reciprocal is -toš: it ɔ́x-toš-čɬ *we saw each other.*

The Kal reciprocal is -tuwexʷ: pəls-tuwé(xʷ) *they are at war; they are killing each other* (cp. Kal s-pəls-tuwéxʷ *war*, with CA t'áp-ən-twæš *there was war; shooting one another*); es-uč-tuwéxʷ-i *they are meeting*; tkʷ'-əs-tuwéxʷ *they laid their bets* (tkʷ' *lay one*); q'ɔm-ən-uwéxʷ *they wrestled*; es-χʷəl-χʷəl-s-tuwéxʷ-i *they are separating.*

3.8. The demonstratives in Salish are important, though their meanings and usage are subtle. The articles, demonstrative pronouns or adjectives, and the demonstrative adverbs are closely related in form in each language. Unlike those of the Interior languages, the demonstratives of the Coast languages have distinctive forms for gender, definite and indefinite, and presence and absence, which are best demonstrated for Cheh.

Till apparently once had distinctions which are no longer consistently observed. Moreover, a pluralizing notion inheres in the feminine article. The Till articles are: ła (ɬ, łə) feminine or plural; da (d, t) non-feminine. The following are Till demonstrative pronouns:

	Singular		Plural
	Non-feminine	Feminine	
present	diš, dič	ʒic	ʒik, ʒikɬ
absent visible	dəl, dəlč	ʒəl, ʒəlc	ʒəlk, ʒəlkɬ, dəlk
distant	łači, łačič	łaʒi, łaʒic	ła ʒik, ła ʒikɬ
absent invisible	ła ač	ła ac	ła ak, ła akɬ, (ła agəs, ła agəɬ)

The Cheh articles are:

	Non-feminine	Feminine
general indefinite	t	c
general definite	it	ic
definite present	tit	cic
definite absent	tat	cac

Change of consonant from t non-feminine to c feminine is apparent, as are vowel changes between the definite present and absent. In Cheh, and apparently in S-D, one of these articles is required before nominal forms, including nominalized verbs.

The Cheh demonstrative pronouns are:

	Non-feminine	Feminine
this near me	tit xté·	cic xcé·
that near you	tit xt'é·s	cic xc'é·s
that near him	tit xta	cic xcá

The articles are all definite present and uniformly t of the non-feminine becomes c of the feminine in both article and verb (adverb). Both t and c of the second person are glottalized, and -s with the glottalized affricate c' indicates the demonstrative pronoun of the second person. The changed vowel of the verb (adverb) from e· to a differentiates the more remote pronoun of the third person.

Cheh demonstrative adverbs differentiate first, second, and third persons, as well as rest, result of motion, and motion:

	Rest	Result of motion	Motion
here near me	na?	ša?	ša?m
there near you	niš	ła·kʷ	lá·?k'um
there near him	ša·n	ši·?n	?

Obviously n- is indicative of rest; probably the prefix n-rest and suffix -n have different functions, since -?n occurs with a change of vowel in the third person result of motion. Similarly, -m indicates motion. In connection with these adverbs the consonantal change Cheh š > CA xʷ should be noted.

The available S-D demonstratives are so unsystematic and inconsistent that any conclusions even as to what the forms are is impossible. The number of demonstratives seems fairly large, but they are undifferentiated. In S-D feminine and non-feminine forms are distinguished, but according to Tweddell, proper usage has broken down. The following are suggestions about the relationship of some of the disparate forms of S-D.

The articles seem to be: t feminine, c non-feminine.

Some of the S-D forms comparable with Cheh are:

	Non-feminine	Feminine
this right here	ti	ci
that, there	ta, ta?a	ca
that over there	ta?at, ta?ac	ci
this	titi?	cici
that other	tádi	
this, that	ti?iɬ, tiɬ	ci?iɬ
there further	túdi	

In CA the stems are quite apparent for three demonstratives—near speaker, near second person, and near third person, remote, general. The Kal demonstratives and articles seem quite closely related, but without extensive work with speakers, it is impossible to be sure about meaning or usage. The comparisons that follow are of form only; the meanings are for CA:

Articles:	CA	Kal
the one near speaker	x̣æ	ye
the one near you	cæ	ci
the one farther off	ɬæ	ɬu?
Demonstrative Adverbs:		
here, near me	x̣i?ˈ	?e
there near you	ci?ˈ	ci?
there near him, remote	ɬu?ᵘ	ɬi?e

Intensive Demonstrative Adverbs:	CA	Kal
here near me	x̣iy'æ	ye?e, i?e, ye
there near you	ciy'æ	
there, over there	ɬuw'æ	ɬu?(?)

The CA demonstratives have a changed vowel æ > iˈ and the suffix, probably -?æ, which changes ?ˈ to y', ?ᵘ to w'.

AN ACOUSTIC ANALYSIS OF SHAWNEE: IV*

NANCY P. HICKERSON
INDIANA UNIVERSITY

4.2. Intra-contour variation
4.2.1. Inherent variation
4.2.2. Inter-segment variation
4.3. Inter-contour variation
4.4. Inter-span variation
5. Pitch
5.1. Range
5.2. Qualitatively conditioned variation
5.3. Independent variation (intonation)
6. Summary
6.1. Units
6.1.1. Vowels
6.1.2. Glides
6.1.3. Consonants
6.2. Correlation with phonemes

4.2.1. Superimposed on the general configuration of the contour as outlined above are variations in the regularity of the profile line itself. While never level, it is at times smooth, varying gradually in vertical position. On the other hand, rapid deviations in amplitude as slight as .025″ to as strong as .15″ (around ½–3 decibels)[1] may produce on the one extreme a rather fuzzy, on the other a jagged, profile line. The smooth line is that of purely harmonic segments; irregularities correspond to friction and glottalization in the spectrum. (Not all variations in the profile line correlate this obviously with spectral features, nor is the distinction among harmonic, frictional and glottalized amplitude line always clear; however, we use the contrast as a framework for describing amplitude features characteristic of various types of segmental units, as well as features which override segmental units.)

(A). Harmonic line: Harmonic segments correspond in the amplitude display to a smooth line which fluctuates gradually between dips and peaks. General, step-wise shifts downward in stretches of harmonic line parallel the boundary between vocalic and resonant segments.

(1) Vocalic profile. Peak amplitude in vocalic segments (in a limited sample) is from .4″ to .675″. The latter figure is maximum amplitude for this corpus, so that the amplitude range for vocalic segments covers approximately the upper half of the total amplitude range. This variation in amplitude is considered in relation to both quality and quantity of vocalic units.

Amplitude: quality: Table 1 matches occurrences of single-quality vocalic segments with amplitude (measured in centimeters). There is some seeming correlation of amplitude and vowel quality, in that all *i* peaks are in the range .5″ to .6″. Other vowels have a wider range of variation in amplitude maxima, with *a* having a greater preponderance of lower maxima (approximately half below .5″) than the others.

More complex vocalic segments in this sample confirm a variable but positive correlation between amplitude and quality. In sequences *y*V and V*y*, maximum amplitude tends to occur at, respectively, the beginning and end of the segments. Sequences *w*V are level, or at times the beginning of the segment corresponds to the amplitude minimum.

Sequences in which the semivowel peak occurs intervocalically are similar. In (aye),

* For Part I, II and III see IJAL 24.20–29, 24.130–42, 25.22–31; the present part IV, which concludes this series, is edited by Fred Householder and C. F. Voegelin (cp. **6.2**).

[1] In general, .8″ = 25 decibels. This varies from .1″ = 5 decibels near the baseline to .25″ = 5 decibels at the peak amplitude calibrated; the variation mentioned here falls within the latter range.

TABLE 1

max. ampl.	a	e	o	i	e(y)
.40″	2	1			
.45″	3		1		
.50″	2	2		1	
.55″	3	1	1	3	1
.60″	2	2	1	8	1
.65″	1	2			1

TABLE 2

max. ampl.	6–8	9–11	12–14	15–16
.40″	3			
.45″	2	3	1	
.50″	3	2		1
.55″	3	2	1	1
.60″	3	6	5	
.65″	1		2	1

the *y*-maximum coincides with maximum amplitude. In (iwe), *w*-maximum coincides with lowest amplitude in the segment. After *o*, in (owa), (owe), the *w*-maximum equals the amplitude maximum. (awa) has approximately level amplitude, with neither peak nor valley cooccurring with *w*-maximum.

Amplitude: duration: Table 2 notes the occurrence of maximum amplitude in single-quality vocalic segments of varying duration. Again there seems to be some—but incomplete—positive correlation between duration and amplitude. In the sample examined, a majority of vowel segments with relatively low amplitude (.40–.50″) are relatively brief (6–11 cs.)—11 of 15 fall in the range 6 to 9 cs. A majority of those with relatively high amplitude (.60–.65″) are of relatively long (10–16 cs.) duration (14 of 18). However, segments of various durations occur with various degrees of amplitude.

(2) Resonant profile: The division between vocalic and resonant segments is often discernible in the amplitude display. Peak amplitudes occurring during resonant segments average perhaps two-thirds as high as maxima during vocalic segments, so that while resonant segments have sometimes greater amplitude than do adjacent vocalic segments, the reverse is usually true. The most usual configuration for a resonant segment occurring between two vocalic segments of approximately equal amplitude has a sudden dip down from the amplitude of the preceding vowel, and a rise at the onset of the following vowel. In the case of *m* and *n*, the transition line forms clear angles and the resonant profile itself is usually level. In the case of *l*, the beginning of the segment may be marked by a sharper, brief dip in the profile.

Following a vocalic segment of relatively strong amplitude, the nasals are marked by an initial drop in amplitude (as above), with smooth transition to the following vowel, the profile remaining approximately level or rising gradually from nasal to vowel. Under similar conditions, *l* has an initial dip in profile, but in general maintains approximately the terminal amplitude of the preceding vowel, the line bending down finally to the level of the following vowel.

Followed by a vocalic segment of relatively strong amplitude, *m* and *n* begin level with or very slightly lower or higher than the preceding relatively weak vowel and rise toward the amplitude level of the stronger vowel. These segments are, in effect, the beginning of a rising curve from relatively low amplitude toward an amplitude peak which occurs in the following vocalic segment. *l*—segments appear to rise more suddenly in amplitude from the level of the preceding vowel and to maintain the level of the following vowel throughout.

Phrase-initial resonant segments, which are very brief in duration, appear in the amplitude display as the beginning of a rapid up-curve toward an amplitude peak in a following vowel segment.

After glottalized vocalic segments, *m* and *n* rise from an onset near the base-line to a plateau somewhat lower than the following vowel, which rises steeply at its onset. *l* rises, similarly, from a very low onset to

approximately the level of the following vowel. Preceding a glottalized vocalic segment, *l* has a falling profile from the level of the preceding vowel to a nadir at the point of juncture with the following segment (coinciding approximately with the first glottal band). In all these occurrences, the resonant profile may show slight glottal perturbation.

Frictional profile may also impinge on resonant segments, apparently raising maximum amplitude while causing irregularities in the profile line (see below, C.).

(3) Harmonic decline: The decline from the peak amplitude of a harmonic segment to an amplitude minimum occurring during a plosive segment or *θ*, generally continues the harmonic line. The decline is a gradual slope, with its highest point at the termination of the vocalic segment, and continuing to a nadir at or near the baseline, or until interrupted by a release-pulse (if the minimum is contained in a plosive).

(B). Glottalic line: (1) Glottalized profile: Segments called glottalized (V?, R?) in the spectrum analysis have irregular, jagged amplitude lines which slope, generally, from beginning to termination of the segment. Within this general slope, fluctuations in the line as great as .25″, apex to nadir, may occur in rapid succession.

Glottalized vocalic segments in this sample reach a minimum amplitude, at or near the end of their duration, of approximately .25″ to .45″—seldom less than half of maximum vocalic amplitude. Glottalized resonant segments are generally very reduced in amplitude, falling from approximately .25″ at onset to a nadir at or very near the baseline. Thus glottalization has the double effect of irregularity of profile line and progressive lowering of overall amplitude. (Amplitude decline coinciding with glottalic line, then, is part and parcel of the glottalized segment and is generally complete at the termination of the segment.)

(2) Secondary glottal effect: The first of these effects is also present in segments not previously described as glottalized. Such secondary glottal effects appear to be (at least mainly) progressive, affecting continuants following a glottalized segment. In this sample, glottalized vowels are followed by resonant, fricative, and vocalic segments with glottal profile. Glottalization of a resonant affects a following fricative segment, and may have some effect on an immediately preceding vowel.

(C). Frictional line: Friction in the spectrum also corresponds to an uneven line in amplitude display. The unevenness ranges from a rapid, shallow fluctuation (characteristic, for example, of most *s* segments), to a marked deviation (frequent in phrase final) similar to the glottalic line but generally less jagged.

(1) Fricative profile: Segments called fricative in spectrum analysis vary greatly in vertical height of amplitude profile and in general profile configuration. *s*-segments are typically plateaus of frictional profile, clearly delimited by amplitude dips initially and finally (the final dip is generally the deeper). *s* has a relatively high maximum amplitude level, ranging between approximately the same maximum as adjacent vowels and perhaps half as high. In intervocalic environments, the level of the *s* maximum amplitude is usually approximately that of the following vowel. That is, it is about the same as both when they have equal aplitude, relatively high when the following has greater amplitude, relatively low when the preceding has greater amplitude.

After glottalized segments, *s* has secondary glottalization; the profile is much more jagged than usual and amplitude rises from an initial nadir near or at the baseline (near it after V?, at it after R?) to or almost to the level of the following vowel.

Phrase-initial *s* similarly has a rising profile from baseline to about the initial amplitude of a following vowel. Following a

stop and preceding a vowel, in (ts), the *s* profile is again approximately level and as high as the peak amplitude of the following vowel.

Frictional line is rarely observed in the amplitude profile of *θ* segments. Harmonic decline from a preceding vocalic segment continues to an amplitude nadir which endures until the onset of a following vowel. Following R?, the amplitude minimum of the glottalized segment is maintained till the onset of the following vowel.

The amplitude profile of intervocalic *h* slopes smoothly from the maximum of the preceding vowel to a nadir approximately midway in duration of the fricative segment, and then rises toward the following vowel peak. The profile is that of a valley, with no point of clear demarcation from preceding and following vowels (as with *s*) or following vowel only (as with *θ*). The amplitude minimum of *h* ranges between approximately one-half and two-thirds of the maximum amplitude of adjacent vowels, depending on the relative strength of these—roughly half the amplitude of a preceding relatively strong vowel, two-thirds that of a following relatively weak vowel; approximately two-thirds of both when both are relatively weak, half of both when both are relatively strong, etc. In the sequence (k₂ht) the amplitude is about one-third that of the next, relatively strong, vowel. Phrase-initial *h* sometimes appears as a separate curve with amplitude about one-quarter (or less) that of the adjacent vowel.

(2) Secondary friction: Frictional line is also present in the amplitude display paralleling segments not called fricative in spectrum analysis. Some secondary occurrences of friction appear to be adjacency effects of fricative segments. Vocalic segments adjacent to intervocalic *h* usually have frictional profile over part or all of their duration. This friction appears to add to (unlike glottalization, which detracts from) overall amplitude level of the segments affected. Phrase-final vowels, similarly, have secondary friction. (We have noted upper frequency friction in some phrase-final vowel spectra; see above.)

(3) Frictional decline: Frictional decline occurs at phrase-final. The amplitude profile often shows a fairly rapid fall to about two-thirds the level of a preceding vowel (as with intervocalic *h*), followed by a long, more gradual decline to zero amplitude. In other cases this division is not obvious and the long slope from the maximum of a preceding vowel to minimum finally is fairly uniform.

(D) Minima and associated features: Segments identified in spectrum analysis as *p*, *t*, *k*, and *θ* show, intervocalically a, amplitude profile with a gradual harmonic decline from a preceding contour, with or without some duration at the nadir of this decline, up to the beginning of the steep onset of a following contour. Just before or just after the occurrence of minimum amplitude in *p*, *t*, and *k* a small separate peak occurs, coinciding in the spectrum display with the release spike.

θ-segments encompass a smooth decline which reaches its nadir just before the onset of the next span. The decline generally ceases about .05–.10″ above the baseline. The final rise is direct, without intermediate peaks. Similarly, the decline from a preceding *s* slopes through the *θ*-segment to a minimum just before the vowel onset. After a glottalized segment the minimum is lower and its duration longer.

A sharp decline with immediate rise which is terminal in *s*-segments has already been mentioned. It might be noted that the final rise is like that of *θ*; thus, the positive friction profile of *s*, enduring almost to the onset of a following vowel, contrasts with a negative profile in *θ*.

t spectra coincide with a decline to a nadir which falls between 0 and .10″. There is usually but not always some duration (about 2 cs.) at the nadir. The release coincides with an intermediate peak in the onset curve of the following contour. When fol-

lowed by a fricative, (ts), this intermediate peak is rarely seen; the rise to peak amplitude of the *s* is direct and rapid.

p-segments are very similar to *t* in amplitude profile. The release peak seems to be generally lower and more separate from the onset curve than that in *t*-segments.

k-segments typically have a more definite separation between release peak and onset curve than do either *p* or *t*. k_2 has often a stronger peak and more separation than k_1. In the former variety, duration at the nadir occurs between release and the beginning of contour onset; in fact, the release peak may occur before the initial decline is complete. In k_1, the main duration at the nadir usually precedes the release peak, which may merge with the contour onset, as in *t* and *p*.

In plosive segments in general, both the amplitude of preceding vocalic segments and the total duration of the segment appear to correlate positively with the vertical location of the nadir and with duration at the nadir. Relatively high amplitude in a preceding vowel and relatively brief duration are factors which seem to condition a relatively high amplitude level throughout the segment. For example, in *k*-segments (which appear in a running sample in larger numbers than *p* or *t*), relatively long segments (13–16 cs.) preceded by relatively weak vocalic segments and by V? have minima at or near 0, with several centiseconds' duration at the nadir. When preceded by a fairly strong vowel, the decline may or may not reach 0; the nadir is followed immediately by the onset of the following contour.

Relatively brief segments (9–10 cs) have greater amplitude at the nadir, especially when preceded by a relatively strong vowel. Onset of the following contour immediately follows the nadir, and the release peak may occur before the decline is complete.

4.2.2. The location of peak amplitude in complex contours depends upon both qualitative and quantitative factors. When vocalic and resonant segments alternate (e.g. -VRV-), then peak amplitude occurs in the vocalic segment of greatest duration. Within complex vocalic segments, highest amplitude usually corresponds to the qualitative principle already described (see above, **4.2.1**). Thus, for example, in (kyela), greatest amplitude coincides with the *y*-maximum; in (θeme·), it occurs during the longer *e*-segment. In (tamowa), it approximately coincides with the *w*-maximum.

Amplitude does not pattern across *h*-segments in this way. Vocalic segments preceding and following *h* in this sample are usually of approximately equal amplitude.

4.3. Within spans as we have delimited them (on the basis for duration, see **3.3**), strongest amplitude almost always occurs during the initial contour (stronger by .05″ = c. 1 db., or more). If this proves generally true, it may be possible to use amplitude as a guide to segmentation in cases where alternate segmentations might be possible on the basis of duration of contours alone.

4.4. An utterance-final span, or span plus remaining contour(s), is often generally reduced in amplitude. The peak amplitude is significantly lowered (by about .10″ = 2 db. below the peak amplitude of neighboring spans) and amplitude elsewhere in the span is still lower in proportion.

5.1. Pitch of the fundamental is estimated in cycles per second by measuring the height of any harmonic (in narrow band spectrograms) and dividing by the number of that harmonic. In a sample of 28 spectrograms (not a continuous sample, but all from the same reel of tape, phrases 99 to 145) the lowest measurable[2] pitch is 135 cps., the highest is 210 cps. (a range of about a musical fifth). No single phrase

[2] In glottalized vocalic segments the pitch fall is so steep and rapid (accompanied also by amplitude drop and glottal striations) that the pitch at the end of the fall cannot be accurately estimated.

covers this entire range—in some brief phrases which contain no glottalization the variation in pitch may be as narrow as 15 cps. (a bit over one tone). In other phrases it may be as wide as 45 cps. (about a fourth). The most frequently used tonal range in these phrases is approximately 155–185 cps. (D♯ to F♯, a minor third).

In the continuous sample (2535–2547) referred to in sections **3** and **4**, the total (measurable) range is very similar, 140–200 cps.

5.2. The most obvious pitch variation closely connected with qualitative units is that which co-occurs with glottalization. Glottalized vocalic segments have characteristically a steep pitch dip which can rarely be measured at its nadir. When resonants are glottalized, the dip may begin terminally in a preceding vowel, but occurs mostly during the resonant (and is even more difficult to measure, the spectrum being generally weaker than glottalized vocalic spectra). In the absence of other pitch-conditioning factors, the next vowel following a glottalized segment does not quite attain the level of pitch preceding the glottalization, but may be about 10 cps. (a semitone) lower.

Certain consonant sequences also condition a lowering of pitch of the preceding vowel (not a fall, but a level pitch 10 or 15 cps. lower than neighboring vowels). We have noted such a lowering before F_1F_2 ($s\theta$) and SFS_2 and SF_1F_2 (k_2ht, k_2hs) sequences, and its absence before SF (ts, $t\theta$). When such lowering of pitch does occur, depression of following vowels also seems to occur (as in vowels following glottalization).

5.3. We can break a stretch of Shawnee speech into segments (intonation contours) defined by rising pitch. This segmentation is independent of amplitude and duration units smaller than the phrase, as demarcated above, in **3** and **4**. A sample of 15 contours shows great variation in duration (between about 50 cs. and thrice that). Intonation contours override conditioned lowering of pitch—that is, the rise from the lowered pitch level conditioned by consonant environment to that of a following vowel is not considered the termination of a contour unless it is definitely higher than the prevailing pitch level before the depression. A secondary elevation of pitch seems to occur at the onset of a vowel following such a contour final, if it is not subject to the lowering influence of a consonant sequence or of glottalization.

Aside from the lowering of pitch conditioned by qualitative sequences, there is not much variation in general pitch level within a phrase. Pitch maxima generally rise about 10 to 20 cycles above the level of preceding pitch-carrying segments. But an overall range of variation of 40 to 50 cycles may exist from beginning to end of a rather long phrase (e.g. 2535). The general pattern of phrase intonation appears to be one of gradually descending pitch level—the maxima of successive intonation contours are each slightly lower than the preceding so that, while there is a terminal rise in each span, the cumulative result is a step-wise descent in pitch. We call such a succession of contours an intonation span.

Utterances made up of two or more phrases do not appear to continue this descending pattern, nor does any intonation pattern larger than the span emerge.

6.1. In spectrum analysis, units have been delimited on the basis of (a) continuous variation—differences of degree—within a continuum, as exemplified by variation in vowel quality or in the placement of the maximum power in *t*, *s*, etc. We have also occasionally noted (b) environmentally controlled but non-continuous variation and described sub-units which were ascribable on the basis of complementarity to the same unit, as in k_1 and k_2. The simple units thus defined in sections 1 and 2 can be

called 'phonemes' in Daniel Jones' sense i.e. a 'family of sounds'.[3] Whether or not these units are sufficient to the corollary function of distinguishing meaningful units[4] has not been demonstrated, nor has the problem been approached.

6.1.1. Shawnee is an example of a language in which there is overlapping of the phonetic territory of vowels. Jones noted the occurrence of vowel overlap in certain languages, e.g. French and Russian, with contrast maintained in specific 'phonetic contexts' (we have said 'phonetic environments').[5] Our data confirms this kind of picture, and we can specify the amount of overlap, and the influence of specific environments within the different vowel areas. Uniformly in the three vowel units in which overlap occurs, labials have the effect of conditioning placement relatively back, dentals rather front; velars vary in influence, but in general have an effect intermediate between dentals and labials; stops condition relatively high, nasals rather low placement; etc. Relatively long vowels, in any case, would probably have their maximum outside the areas in which overlap might occur.

We find it more realistic to speak of the phonetic area or range utilized or covered by a given vowel than of a 'family' of sounds in the sense of a group of discrete sounds from which a selection is made according to contextual factors. This is because we have traced the courses of individual segments and find them to be variable and overlapping. We have not isolated a single point in the course of a vowel, or—as is perhaps inherent in the application of an auditory technique—formed a generalized impression of vowel quality in a given environment. It is unrealistic to think of a vowel phoneme as a 'family' of sounds with a specific point being utilized after or before, say, [p], another after [s], etc.—any vowel in any environment has changing quality and thus covers more than one specific point in the total vowel area; furthermore, the paths of [o] in different contexts can and do overlap. 'Abstract' [o] could be called a 'family' if by the term one means a group of segments whose *entire paths* overlap or fall within a limited phonetic area, and the differences between which are regular, conditioned by phonetic environment, duration, or other contextual factors.

Languages have been frequently described in which there is a qualitative difference between corresponding long and short vowels. The difference is often something of this sort, that short vowels are placed somewhat more centrally than the corresponding long vowels (for example, Sinhalese.[6]) We find in Shawnee a comparable picture, with relatively brief vowels being relatively central, relatively long vowels less so at the maximum formant position. That is to say, there is no dichotomy between the phonetic area covered by, for example *e·* as opposed to *e*; rather, within the *e* territory, other things being equal, the briefer the segment the more centrally (and the longer the segment the less centrally) the vowel maximum is placed.

6.1.2. Jones noted the influence of a following vowel on the beginning point of y- and w- glides in English.[7] We have seen a similar tendency in Shawnee for initial and intervocalic *y* and *w*; and we also note the influence of a preceding consonant when a glide is post-consonantic.

Various types of vocalic sequences were described in the preceding pages (**1.3**), transcribed provisionally as SV (e.g. *yo*, *we*), VSV and VS. In general, the S-portion in such sequences is characterized by rapid movement to and/or from a maximum point in the *o* or *i* territory; the V-portion by

[3] D. Jones, The Phoneme (Cambridge: Heffer, 1950), p. 10.

[4] Op. cit. 13–14.

[5] Op. cit. 93–96.

[6] Op. cit. 29.

[7] Op. cit. 70.

slower movement within a single vowel domain. Another approximate (and in fact comparable) segmentation of multiple-quality stretches of vocalic spectrum can be made on the basis of duration, apportioning the number of duration units suggested by the total duration time of the sequence in question among the number of segments indicated by qualitative shifts (see **3**).

The following appear to be the alternative possibilities of phonemic interpretation of vocalic stretches with changing quality, judging from the formal data alone: (1) Identify all S with the vowel similar in quality to the S maximum; then all glides are sequences of vowels. (2a) Call all S consonants, on the basis of analogies to consonants in duration and in influence on formants. (2b) Call pre-vocalic and intervocalic S consonants, but call VS a two-vowel glide or diphthong, by analogy with the privileges of occurrence of consonants (initial, intervocalic, not final). (3) Identify changing-quality glides as single units, diphthongs (e.g. ^{i}a, a^{i}); then longer vocalic stretches are combinations of diphthongs and vowels (e.g. *aya* = /a$^{i i}$a/, *aya·* = /a$^{i i}$aa/. We have above, in **1.3** and elsewhere in citing forms, been proceeding from an assumption similar to (3), but have used an orthography like that suggested in (2a). This is felt to be unambiguous, however, and easily convertible to a transcription based on the considerations noted and/or other evidence (such as that of morphology).

6.1.3. For the most part, consonant units have been set up on the basis of variation of generally similar spectra. For example, *s* spectra all have a general sameness of kind in distribution of energy, in type of energy (frictional, distributed above 2000 c.p.s. with several resonance bands discernible). Furthermore, what variation occurs is regular, having clear relationship to phonetic context (environment). Plosives, to take a more complex category, have common spectrum features; within this group we can find two sets of spectra with regular variation in all phonetic contexts, which we have called *p* and *t*; one set with regular variation before *a*, *o* and *e* (k_2), and another which occurs only before *i* and *y* (k_1). This is the broadest grouping which we can achieve on the basis of conditioned variation within a continuum. Complementarity must be called on to unite k_1 and k_2 as a single phoneme.

6.2. The phonemes set up for Shawnee[8] may be correlated with our phonetic units as follows: /a/ = a; e (esp. after k, w, m), /e/ = e; ye (after k); ey (before cons. plus i), /i/ = i; ey (rarely), /VV/ = V· (no correlates of 'rearticulation' noted). /p/, /t/, /k/ = p, t, k (before vowels); ph, th, kh (before consonants). /θ/, /š/, /č/ = θ, s, ts. /m/, /n/, /l/ = m, n, l. /ʔ/ [ʔ] = ʔ (glottalization of harmonic segments), [h] = h. /w/ = w; h (between consonants); the sequences /wa/ = o (after p or m), /wo/ = o (after consonants). /y/ = y. There is no clear correlate for stress.[9]

[A more interpretable correlation might be made by comparing the phonemicization derived from articulatory phonetics with the units derived from spectrograms with, however, both based upon the same tape recordings, the same speakers, or at least the same dialects of Shawnee. The correlation offered here (**6.2**) is between (1) a phonemicization which reflects information from more than one Shawnee dialect (and from several informants, and from non-casual as well as many varieties of casual utterances), and (2) units suggested by spectrograms of a brief utterance by a single informant—informal narrative, i.e., one variety of casual utterance. Ed.]

[8] By C. F. Voegelin, chiefly in 'Shawnee Phonemes', Language 11.23–37 (1935).

[9] The complete dissertation (available from University Microfilms, and on file in the Indiana University Library) contains three sections omitted here: a comparison of Shawnee spectrographic data with Danish (as reported by E. Fischer-Jørgensen), a detailed expansion of section **6.2**, and an appendix on auditory and articulatory data, besides numerous charts and spectrograms.

PALEOSIBERIAN ETYMOLOGIES: II

DEAN STODDARD WORTH
UNIVERSITY OF CALIFORNIA, LOS ANGELES

0. Parts of the body in Kamchadal
1. The head and parts thereof
2. The trunk
3. The upper extremities
4. The lower extremities
5. Internal organs
6. The genitals
7. Miscellaneous body parts
8. Excretions

0. An earlier paper in this journal[1] stressed the importance of reconstructing valid etymologies within the Kamchadal language itself before proceeding with external comparisons, and suggested a number of such etymologies for Kamchadal kinship terms. The present paper offers a continuation of this work, this time among the terms for parts of the body in Kamchadal. The goals and methods remain the same; so, unfortunately, do the difficulties occasioned by spotty and inaccurate recordings of the terms in which we are interested. A few new sources have been used, the most important of which are the word lists taken down by Tjušov on the west coast of Kamchatka in the nineties of the last century.[2] The material from West Kamchadal, the only surviving dialect, remains considerably richer than that for either Northeast or South Kamchadal; this fact not only lends a certain imbalance to inter-dialect comparisons, but also renders more acute the problem of Koryak loanwords in W Kam, since this area has been and is being heavily penetrated by both Koryak and Russian terms. Since the question of the historically shifting Koryak-Kamchadal border is a complicated one requiring special study, it was felt best to restrict the present paper to the three more or less pure Kamchadal dialects and to leave comparisons with Chukchee, Koryak, and even with the much closer Uka River and Karaga Island dialects for later.[3]

---

[1] Paleosiberian etymologies: I. IJAL 25.32–40 (1959).

[2] V. I. Tjušov, *Po zapadnomu beregu Kamčatki* (= *Zapiski imperatorskogo russkogo geografičeskogo obščestva po obščej geografii*, XXXVII, 2), SPb., 1906, pp. 470–512. Tjušov's lists are divided into the villages in which he recorded words; these are abbreviated as follows: Sop = Sopočnoe, Mor = Morošečnoe, Bel 2 = 2nd trip (1896–97) through Belogolovskoe, Nap = Napana, Kov = Kovran, Vor = Vorovskoe, Kol = early (1894) and admittedly inaccurate recordings in Kolpakovskoe, Kru = Krutogorovoe. Tjušov uses underlined ķ for uvular q. Other new sources are abbreviated as follows: Steb Xar = Kamchadal words from the village Xajrjuzovo in S. N. Stebnickij, "Nymylany-Karagincy po materialam S. P. Krašeninnikova", Pamjati S. P. Krašeninnikova (= Sovetskij sever, 2), Leningrad, 1939, pp. 129–170; Skorik K voprosu = P. Ja. Skorik, "K voprosu o klassifikacii čukotsko-kamčatskix jazykov", AN SSSR, Voprosy jazykoznanija, 1958, 1, pp. 21–35. For abbreviations of other sources and for details of transcription, etc., see Paleosiberian etymologies: I, IJAL 25.32–33.

[3] S. N. Stebnickij, making use of an unpublished "Vocabularium latinocoriace-karaginice" of Krašeninnikov in "Nymylany-Karagincy po materialam S. P. Krašeninnikova", made a generally convincing case that the Karaga Islanders were originally Kamchadals whose language was being Koryakized at Krašeninnikov's time. A similar case could probably be but has not yet been made concerning the Uka River dialect. P. Ja. Skorik has recently proposed that the Kerek dialect of Koryak be considered a separate language ("K voprosu o klassifikacii čukotsko-kamčatskix jazykov"; this article, incidentally, contains the undocumented assertion that "of the once many dialects (of Kamchadal-DSW) . . . there have been preserved only a few: those of Sedanka, Xajrjuzovo, Napana, and Sopočnoe". There is no evidence that the differences among these four West Kamchadal villages are comparable to those dividing the former Kamchadal speakers into NE, S, and W Kam dialects). Much remains to be done in the historical dialectology of the Kamchadal-Koryak area.

One of the results of comparing terms for parts of the body in NE, S, and W Kam has been to suggest a number of regular sound correspondences among these three areas. Particularly striking are the cases where a nasal in S Kam corresponds to an oral stop in NE Kam or occasionally to a lateral in W and/or NE Kam. For example, in the dental series:

NE d ~ S n ~ W l : NE dyčil ~ S ničil ~ W lčil *tongue* (for details see **1.16**); NE de, dede ~ S naxa, naa ~ W lalxa *breast* (**2.1**); cf. also NE dkin, dukin, deked *milk* Radl II.16, 17 ~ S nokkol Sauer App; in reconstructions the upper-case D is used to symbolize this set of dialectal alternations. Occasionally, only the nasal and lateral consonants obtain, e.g., (1) NE, W l ~ S n : NE ele, le, W līl, lēl *eye* ~ S nana, nani (**1.9**); W iɬxin *saliva* ~ S nixit (**8.2**); the reconstruction symbol for this set is Ĺ. Similar to the dental series d ~ n ~ l is the labial series (2), NE b ~ S, W m : NE byxlem *blood* ~ S misim, W mlxim (**7.6**); NE baza *tear* ~ S miza, W mza: (**8.1**); this set is symbolized by M. One suspects a similar set in the velar series, where (3), NE g ~ S n : NE geštem *urine* ~ S neštem, but it would be premature to connect this with W Kam tx in txiz *urine* (**8.5**).

In striking opposition to the situation obtaining with kinship terms, where only three or four roots are common to all three dialect areas, the Kamchadal terms for parts of the body show considerable unity. Of the 53 parts of the body for which we have terms recorded in more than one area, there are 37 or app. 70% which either obviously or very probably occur in all three areas. Terms which can be considered obviously common to three areas are **1.4** huad *cheeks*, **1.5** va:d *jaw*, **1.7** heit *neck*, **1.8** kik *throat*, **1.10** tilte *eyebrow*, **1.12** käka *nose*, **1.13** kəna(s) *nostril*, **1.14** kəsx *mouth, lips*, **1.15** ki/ep *tooth*, **2.5** kumx *anus, buttocks*, **3.1** tənə *shoulder*, **3.6** ki/e *finger*, **3.7** ko/ux *fingernail*, **4.3** šezə *knee*, **4.4** (ə)čeŋ *sole*, **5.2** luŋ *heart*, **5.5** pa:z(u)x *uterus*, **6.1** šak *male genitals*, **6.2** kalk *penis*, **6.3** kuapan *female genitals*, **7.1** kułx *skin*, **7.2** qətxam *bone*, **7.4** txal *flesh, meat*, **8.2** ʼasat *saliva, sputum*, **8.5** kelel *excrement*. Less sure than the above but nonetheless probably common to NE, S, and W Kam are **1.1** NE, S txuz, W ktxy *head*; **1.2** NE, S čikika, W kičič *forehead*; **1.9** NE, W lə(1), S nani *eye*; **1.11** NE il, elhala, iheu, S iheu, W il, elhala *ear*; **1.16** Dičil *tongue*; **1.17** kuBa *hair*; **2.1** Da *breast, chest*; **2.2** NE karo, S, W kaga *back*; **4.2** NE, S txəmnə, W xčenmy *hip*; **5.1** NE, S šuž, W šihəž *belly, stomach*; **7.6** Mə(x)li/em *blood*; **8.1** Maz *tear*.

There are roughly a dozen terms for parts of the body which oppose two of the Kamchadal dialect areas to a third. NE and S Kam are joined and jointly opposed to W Kam by the seven terms **1.14** NE, S čxe, k(o)v :: W koelx, čanna *mouth, lips*; **2.2** NE, S iču :: W kaga (also in S Kam and probably = NE Kam karo) *back*; **3.4** NE, S sətə :: W xki/e *arm, hand*; **4.1** NE, S tčkada :: W kalxtə (but cf. NE kətxə) *leg, foot*; **5.3** NE, S paga :: W rsö *lungs*; **5.4** NE, S(?) kujru :: W tximen *kidneys*; **8.4** NE, S ŋestem :: W txiz *urine*; to these would be added **1.1** NE, S txuz :: W ktxy *head* and **1.2** NE, S čikika :: W kičič *forehead* if the latter are not accepted as cognates. The root kən appears in the meaning *nose* only in NE and S Kam (**1.12**), but is surely the same as kəna(s) *nostril*, which occurs in all three dialect areas (**1.13**).

Less frequent are terms which join W Kam to one of the other two areas in opposition to the third. NE and W Kam are jointly opposed to S Kam by the three terms **1.18** NE, W lu :: S ku(k), ujxuln *beard, mustache*; **3.2** NE, W čač :: S no term *armpit*; **7.5** NE, W šitxl :: S no term *vein* (but in these latter two cases *n.b.* that the absence of a term in S Kam in our materials does not necessarily mean that such a term is absent altogether); to these might be added **1.11** NE, W il, elhala :: S iheu (per-

haps in N Kam also) *ear* if the identity of these terms is not admitted. The root huäŋ does not occur in the meaning *face* in S Kam (**1.3**) but is surely the same as huad *cheeks* which occurs in all three areas (**1.4**).

S and W Kam are jointly opposed to NE Kam only by the terms **5.1** S, W kso(l)x :: NE kəjl(i)tq, šuž (the latter also in S Kam and probably = W Kam šihəž) *belly, stomach*; S, W ĭixi *saliva, sputum* :: NE no term.

In other cases, there is a different term in each area for some part of the body, *e.g.* **3.3** NE təl(l)o, S kamda, W lorx(?) *elbow*. However, it must be emphasized that even complete disparity among the terms for a particular body part in the three dialect areas does not always speak against an original linguistic unity of those areas. For example, the reconstructed forms for *arm, hand* (these two are not distinguished in Russian *ruka* and hence not in most of our sources) are NE tono and sətə, S sətə, W xki/e (**3.4**), which would seem to point rather to a borrowing of S sətə into NE Kam than to an original identity of these three areas. However, if we compare these terms with those for contiguous areas of the body, certain other possibilities become clear:

	shoulder	*arm, hand*	*finger*	*fingernail*
NE	tənо	tono, sətə	ki/eke/o	ko/ux
S	tənu	sətə	pkeida	ko/ux
W	tynyŋ	xki/e	ke/a(ke), fļux*	ko/ux

* Probably a Koryak borrowing; cf. **3.6** below and tylxufi Kraš Kor Kar, yiļh Bog Kor Texts 145, iélguit Les Kor.

If we assume the three Proto-Kamchadal roots *tənə *shoulder*, *sətə *arm, hand*, *ke *finger, fingertip*, it is easy to see how an original *sətə could have been replaced completely in W Kam by an expansion of the semantic field of original *ke *finger* and partially in NE Kam by a similar expansion of *tənə *shoulder*. Whether such a development actually occurred must of course remain largely a matter for conjecture. Excluded in any case is the possibility that *sətə be a borrowing from Ainu, since the Ainu term for *arm, hand* is quite clearly tek, teke.[4]

The question of whether or not there once existed a unified Proto-Kamchadal language must, on the basis of the fact that some 70% of the parts of the body have common terms in all three dialect areas, be answered tentatively in the affirmative, at least to the extent of admitting that these three dialects go back to a common predecessor. Whether or not this common predecessor itself was a separate language, distinct from the forerunners of modern Koryak and Chukchee, is another question, and one which cannot be answered at the present time. The extremely low number of cognates among kinship terms, which first led us to raise this question of Proto-Kamchadal,[5] cannot change this affirmative answer, since kinship terms, bound as they are to a particular form of social organization, are far more susceptible to change than are terms for parts of the body (except, perhaps, for some few changes caused by successions of tabu words). These facts lend more weight to the suggestion already advanced that Proto-Kamchadal split up into dialects before or just at the beginning of the kinship system recorded in the terms available to us (recordings of the 18th–20th cc.); in all probability, this dialectal splitting was contemporaneous to the dissolution of the matriarchal system, only traces of which were evident when the first Europeans reached the Kamchatka peninsula.

1.1. HEAD.

ktxy : W Kam only; ktxyn Kraš W,

[4] Cf. for example the Ainu list in S. P. Krašeninnikov, Opisanie zemli Kamčatki, 4th ed., Moskva-Leningrad, 1949, p. 470, or J. Batchelor, "An Ainu Vocabulary", Transactions of the Asiatic Society of Japan, X, Yokohama, 1882, pp. 220–251.

[5] Paleosiberian etymologies: I, IJAL 25.33.

ktxyn Radl IV.47, txin Radl IV.75, ktxelxen *crown of h.* Radl IV.46, ktxyn, pl. ktxyn (sic) Tju Mor 475, ktxyn Tju Kov 505, txyšx Tju Vor 509, ktxyn Steb Xar 142, ktxiŋ, ktxin, comitative kektxecom JK 2 (cf. ktxun *headache ibid.*); probably = NE and S Kam txuz, *cf.* below.

xabəl : NE Kam only; xabel' Kraš NE, khobel Les, khabel Erman NE, kabyl, kabył, pl. kabuld Radl II.30, kabulan' *frontalis ibid.*; probably = S Kam abalud *cheeks*, cf. **14** below.

txuz : NE and S Kam; NE tkhouzgéa Les; S t-choosa Sauer App, tkhouzja Les PP; probably = W Kam ktxy, cf. above.

céqal : W Kam only; čékol Tju Bel 2 504, céqal, ceqalíli, ceqlíli *my little h.* JK 2.

čyša : S Kam Kraš S only.

txiva : S Kam Radl III.17 only; perhaps = W Kam ktxy, NE and S Kam txuz, cf. above.

kolcyreric *cranium* : NE Kam Radl II.51 only.

gruŋre *crown of h.* : NE Kam grugreč, grungreč Radl II.23 only.

ktnyxyč *crown of h.* : S Kam Radl III.11 only.

konktel : W Kam Erman NW only.

1.2. FOREHEAD.

čikika : NE and S Kam; NE tchikika Les; S tchiḳika Les PP; may = W Kam kičič, cf. below.

kičič : W Kam Radl IV.40 only; may = NE and S Kam čikika, cf. above.

čučel : NE Kam Les tchoutschel only.

čima : S Kam Radl III.5 only.

gilga : S Kam only; tshilgua Sauer App, gilga Les PP.

1.3. FACE.

huäŋ : NE and W Kam; NE gouénng Les, uän Erman NE; W xojaan Radl IV.13, fèaŋ Steb Xar 144, feaŋ, fean JK 2, xlen Tju Mor 480; surely = huad *cheeks*, cf. below.

1.4. CHEEKS.

huad : in all Kam dialects; NE uan Kraš NE, uan Erman NE, aié ioud Les; S uaad Kraš S; W xoauda Kraš W; surely = huäŋ *face*, cf. **1.3** above.

prän : NE Kam only; pr-énn Les, pran', pranxl, pl. pred Radl II.66.

abalud : S Kam only; abalioud Les PP, abałut' Radl III.1; probably = NE Kam xabəl *head*, cf. **1.1** above.

p-phaad S Kam Sauer App only.

pəlxa : W Kam only; telxan Radl IV.76, pýlxa Tju Kol 511, plxèn Steb Xar 146.

1.5. JAW.

va:d : in all Kam dialects; NE vaad Radl II.88; S vaat *lower j.* Radl III.19; W uahen *lower j.* Radl IV.82, xwawom *lower j.* JK 1.2:4; perhaps = huad *cheeks*, cf. **1.4** above.

xéniryan : W Kam JK 1.2:13 only; pl. xéniryān; perhaps = vaad, cf. esp. W Kam uahen above.

1.6. CHIN.

kymkəč : W Kam only; kymkyč' Kraš W, kýmköč Tju Mor 478, kypkič Tju Kol 511; cf. bykleč below.

bykleč *c., lower lip* : NE Kam Radl II.6 only; perhaps by metathesis < W Kam kymkeč, cf. above; for alternation b ~ m cf. **1.14**.

peganču č' : NE Kam Kraš NE only; perhaps = S Kam paxyxyč', cf. below.

paxyxyč' : S Kam Kraš S only; perhaps = NE Kam peganču č', cf. above.

1.7. NECK.

heit : in all Kam dialects; NE khait Les, xeit, xit Radl II.8; S hitle Sauer App, khaïtill Les PP, xitel Radl III.4; W xaitel Radl IV.9, xéjten Tju Bel 2 504, xitang Tju Kru 512, hīten, hēten, hiten, heten JK 2, xeitaen Steb 88, xèityn Steb Xar 143, xeitən Skorik K voprosu 27 (no source given).

kšuč *back of n.* : W Kam Radl IV.46 only.

papič *back of n.* : S Kam Radl III.14 only.

1.8. THROAT.

kik : in all Kam dialects; NE kyk, pl. kyked *neck, t.* Radl II.57, kouikh Les; S

quiqua Sauer App, kiga Radl III.9; W kyk, pl. kikelin Radl IV.48, qiq JK 1.2: 2.

1.9. EYE.

lə (l) : NE and W Kam; NE *le/o, eled Kraš NE, led sing. Erman NE, led, led Radl II.58, ło, łoo, pl. łood Radl II.60; W *ləl, lella Kraš W, lülld sing. Erman NW, llo, pl. loel Radl IV.51, łułk, łyłk *of the e.* Radl IV.52, lïl, lēl, lel, sing. laŋ JK 2 (cf. ktlein *opened his eyes wide* JK 2.21: 2), ljul Tju Nap 493, lyl' Tju Vor 509, lēng Tju Kol 511, lul, instrumental lulel, pl. lūl Steb 90, lyl Steb Xar 145; probably = S Kam nani, cf. below.

nani : S Kam only; nannin Kraš S, nanit Sauer App, nadid Les PP, nana, pl. nanid Radl III.13; probably = NE and W Kam lə (1), cf. above; for alternation l ~ n cf. above.

1.10. EYEBROW.

tilte : in all Kam dialects; NE talténn Les, tylted Radl II.82; S tittan Sauer App, tittad Les PP; W tyltelen Radl IV.81, tyltèn Steb Xar 146, téltelŋen, tíltalŋen, pl. tíltēn, tílten JK 1.2: 8, tilten JK 2.

1.11. EAR.

il : NE and W Kam; NE iljud Kraš NE, aillo Les, iłu, pl. iłud Radl II.25; W illa Kraš W, i-il Steb Xar 145, īl JK 2, il' Tju Kru 512.

elhala : NE and esp. W Kam; NE ałogeno sing. Radl II.2; W eługułen Radl IV.20, élwalan, élwalaŋ sing. JK 2, cf. ilwa, elfs *to hear ibid.*, él'valèk Tju Sop 472, él'lalèn Tju Mor 480, ílgulung Tju Kol 511.

iheu : NE and esp. S Kam; NE jioud Les; S igiad Kraš S, e-ew, e-ewt Sauer App, i-ioud Les PP, iauin, pl. ivut Radl III.5.

1.12. NOSE.

käka : in all Kam dialects; NE kajako Kraš NE, kekiou, kika Les; S kaiky Kraš S, kika Les PP; W kajakan Kraš W, kakan Erman NW, kaken Radl II. 32, kə́kan Tju Nap 493, kə́kan Tju Vor 509, qéqaŋ, qéqeŋ JK 2.

kən : NE and S Kam; NE akongen Erman NE, kanas Radl II.33 (cf. *nostril* 1.13 below); S kaankang Sauer App, kankan Radl III.8.

1.13. NOSTRIL.

kəna(s) : in all Kam dialects; NE kanngassounn Les, pxaład kanas Radl II.64 (pxal *hole*); S kaang'a Sauer App, kaned Radl III.8; W kingazen Radl IV.41, knašin Tju Kru 512, q(e)ŋas JK 2; surely < kən *nose*, cf. 1.12 above.

1.14. MOUTH, LIPS.

kəsx : in all Kam dialects; NE kissa Les; S kuz-ha Sauer App, kissa Les PP, kyssa *lips* Kraš S, kesx *lips* Radl III.9; W kešxa *lips* Kras W, kasx Radl IV.35, kasx, kysx Tju Mor 480, kaš Tju Nap 493, kysx Tju Vor 509, kèsx Steb Xar 143, ksxa], ksx-al *with the m.* JK 2.

čxe : NE and S Kam; NE cekcé Les, cheksch Erman NE, siks Radl II.68, šakši lips Kraš NE; S cxydda Kraš S, čxecx, pl. čxeda Radl III.3, čkida pl. Radl III.4, utelman čxecx lower lip Radl III.19.

k(o)v *lip* : NE and S Kam; NE kveg, pl. kven, kvengeid Radl II.56, kveg *upper l.* Radl II.6; S k'kovan Sauer App.

koelx *lip* : W Kam only; koelxčin Radl IV.44, xańan koelxčin, koelxčin xańan *upper l.*, koelxčin tnymnyn *lower l.* Radl II.9,44, kèl'xljun Tju Mor 480, kyèlflin Steb Xar 144.

telun : NE Kam Kraš NE only.

čanna : W Kam Kraš W only.

bykleč *lower l.*, *chin* cf. **1.6** above.

1.15. TOOTH.

ki/ep : in all Kam dialects; NE kip khepp Les, kippen Erman NE, kipt, pl. kiped Radl II.45, dukcan kiped *incisors ibid.*; S kuppet Sauer App, kepkep, pl. keped, kiput Radl III.9, 10, koašiden keped *incisors* Radl III.11; W kepun Erman NW, kipkip, pl. kpin Radl IV.42, kančan kpin *incisors*, kat'jał kpin *molars* Radl IV.34, 35, kpin pl., kpī] *with the teeth* JK 2, kpzozga, pkzozga, nkzozga with the teeth JK 2.10, kpyn pl. Tju Nap 493, kpyn pl. Tju Vor 509, kpyn Steb Xar 143.

1.16. TONGUE.

Dičil : in all Kam dialects; NE dyčil Kraš NE, ditchel Les, dicel, dičił, dyčił Radl II.15, 18; S ničil Kraš S, nutshel Sauer App, ničił Radl III.13; W ečella Kraš W, ičił, lčił Radl IV.24, 50, ļčil, ļčīl JK 2, l'čèl' Tju Mor 478, lèčil' Tju Vor 509.

1.17. HAIR.

kuBə : in all Kam dialects; NE koubid Les only (probably < S Kam); S kubiin Kraš S, koobit Sauer App, koubid Les PP, kubit Radl III.11; W kujba Kraš W, ķujmèn Tju Mor 478, kiba, ķýman Tju Vor 509, k-ímèn Tju Kru 512, qim JK **2**, kimin Radl IV.40, k-ym Steb Xar 143.

č(e)ro : NE Kam only; čeron Kraš NE, tcherakhtchr Les, tschrod Erman NE, črod Radl II.12.

tlx : W Kam only; tļxan *hairy* JK 2, tamłaxin *idem* Radl IV.74, perhaps čalxčag, čalgčag Radl IV.14.

čalxčag cf. tlx above.

kšanraknan *hairy* : W Kam Radl IV.46 only.

amtxla *comb the h.* : NE and W Kam; NE emtxlažic Radl II.20, W amtxl(a) JK 2; perhaps < W Kam tlx, cf. above.

1.18. BEARD, MUSTACHE.

lu : NE and W Kam; NE elun Kraš NE, elloud Les, łud, lud Radl II.60, lum, pl. lud *mustache* Radl II.61; W luulla Kraš W, łuveł Radl IV.52, ljul' Tju Vor 509, luił *mustache* Radl IV.52, lúyl' *idem* Tju Kru 512, luwal *idem* Steb Xar 145.

ku(k) : S Kam only; kuukun Kraš S, k'ko-ookat Sauer App, kaut' Radl III.8.

ujxuln *mustache* : S Kam Radl III.19 only.

2.1. BREAST, CHEST.

Da *breast* : in all Kam dialects; NE de, pl. deded Radl II.14, dekuč *mamilla ibid.*; S naxanał, pl. naad Radl III.13, naxpyz *ibid.*; W łałxan Radl IV.49, perhaps xlàjjatum Tju Mor 478, maljav Tju Nap 493.

luteŋ *chest* : NE Kam only; luteng Kraš NE, łuten Radl II.61.

iŋəta *chest* : S Kam only; ingyta Kraš S, ingátáh (sic) Sauer App, imta, inetan Radl III.6.

keitač' : W Kam Kraš W only; perhaps = xoajatyt, cf. below.

xoajatyt : W Kam Radl IV.13 only; perhaps = keitač', cf. above.

2.2. BACK.

iču : NE and S Kam; NE ič Radl II.23; S altshoo Sauer App, iču Radl III.5.

karo : NE Kam only; karog Kraš NE, karo Les; perhaps = kaga, cf. below; cf. also koro *side* **2.3** below.

kaga : W and rarely S Kam; W kigač' Kraš W, kgigać Radl IV.39, kaač Tju Mor 478, kágacank, qagacank *on the b.* JK 2, k-áxan Steb Xar 143; perhaps = karo, cf. above.

2.3. SIDE.

koro : NE Kam only; korod pl. Radl II.51, koroko *on the s. ibid.*, kro, pl. krod, korod Radl II.53.

ksum : S Kam only; ksumksum, pl. ksimid Radl III.11; perhaps = k(a)s(o)n, cf. below.

k(a)s(o)n : W Kam only; kasnank Radl IV.35, káson, kásnank *on the s.*, ksõnk *on both sides*, ksóxal *from the s.* JK 2; perhaps = ksum, cf. above.

2.4. NAVEL.

e/ilč : NE and W Kam; NE eeč Radl II.19; W ilč Radl IV.25.

kyn : W Kam only; kyn Radl IV.48, knynkynkyn Radl IV.44.

2.5. ANUS, BUTTOCKS.

kumx : in all Kam dialects; NE kumx Radl II.55; S kumx Radl III.11; W kimx, kumx JK 2, xumx Tju Bel 2 504.

ańganč : W Kam Radl IV.4 only.

3.1. SHOULDER.

tənə : in all Kam dialects; NE tenod Kraš NE, tnoč Radl II.78, tanioud, tenno Les; S tannun Kraš S, tanutar Sauer App, tanioud Les PP, tnoč, pl. tanud, tnud Radl III.18; W tynynga Kraš W, tynen Radl IV.81, ţnang Tju Mor 478; surely = tono *hand* NE, cf. below.

3.2. ARMPIT.

čač : NE and W Kam; NE sačad Radl II.66; W čaaziken Radl IV.14, tšačen Radl IV.79.

3.3. ELBOW.

təl(l)o : NE Kam only; tallotall Les, tłogenno Radl II.78 (cf. sožogenno *knee* Radl II.71); cf. W Kam lorx below.

lorx (?) : W Kam only; lórxal *up to the e. joint* JK 2.10, lót-al Steb Xar 143.

kamda : S Kam only; kuamtu, pl. kamdat, kamdaut Radl III.7, 11.

3.4. ARM, HAND.

xki/e : W Kam only; xkač' Kraš W, hkez Erman NW, xkič Radl IV.12, manzin xikč *palm* Radl IV.53, xk'ec, pl. xk'en (stem xk'e) Steb 90, 104, xkèc Steb Xar 144, xkic, rarely xkīc, dative xkink JK 2, xk̲èč, pl. xk̲èn Tju Mor 475–476, k̲yč' pl. Tju Vor 509, xkīc, pl. xkīn, dimin. híkelecex, pl. kēkelenc JK 1.2:14; cf. ki/e *finger* **3.6** below.

tono : NE Kam only; tono Kraš NE, tonongen Erman NE, tono, pl. tonod Radl II.79, tonokon *having hands ibid.*, tonno Les; surely = tənə *shoulder*, cf. **3.1** above.

sətə : S and NE Kam; S syttu Kraš S, settoo Sauer App, séttoud Les PP, šetu, pl. šitud Radl III.15, soten *palm ibid.*; NE cettoud Les, sutud *both hands* Erman NE, sutud Radl II.70.

3.5. PALM.

manzə : W Kam only; manzin xkič *palma, digiti* Radl IV.53, mánzen, pl. ménzīn, mánzen JK 1.2: 3.

3.6. FINGER.

ki/e : in all Kam dialects; NE keko Kraš NE, kik-ènn Les, kiked Erman NE, keko, pl. kiked Radl II.36, 40, tkida Les (cf. S Kam below), ixuajrenkin, ixureikin *ring f.* Radl II.23, salkikič *little f.* Radl II.67 (salk-*last, behind*); S kujda Kraš S, p-kojda Sauer App, pkida Les PP, pkojda, pkojčum Radl III.14, kxida Radl III.9, kedyin *middle f. ibid.*; W pkotča Kraš W, tyn-kač *middle f.* Tju Vor 509, t̲xykač' *ring f. ibid.*, sa|ka|kacex *little f.* JK 2.20; cf. kẽkelene *hands* JK 2.

f|ux : W Kam only; ilxčič Radl IV.25, ljuxxljuč' Tju Mor 480, fljuč', ljúxljumč' Tju Vor 509, lúx|cex *little f.* JK 2.41.

čačimč *middle f.* : NE Kam Radl II.9 only.

tzic *index f.* : NE Kam Radl II.83 only.

tamk *thumb* : S Kam Radl III.17 only.

3.7. FINGERNAIL.

ko/ux : in all Kam dialects; NE koud, kououn Les, kuut Erman NE; S ko-uda Sauer App, koud Les PP, koxkox Radl III.11; W qfīn JK 2, kxuin pl. Radl IV.36, kixun Radl IV.40, kuxkux Radl IV.47, kuxkux Tju Mor 480, kxun Steb Xar 144.

4.1. LEG, FOOT.

kətxə : NE and W Kam; NE katxein Kraš NE, katkha Les, khated Erman NE, kètxed, kitxed pl. Radl II.38, 47; W ktxada Kraš W, ktin, ktkin Radl IV.47, k̲txan, pl. k̲txèn Tju Mor 476, k̲txan pl. Tju Vor 509, txang Tju Kol 511, ktxan, ktxn, qetai sing., qtqaŋ, qtxaŋ JK 2, qtxa|, qtqa| *with the feet*, qetacex dimin. *ibid.*, qtxan Steb Xar 145; perhaps = kalxtə, cf. below.

čkada : S and rarely NE Kam; S čkuada Kraš S, tsh-quatshoo Sauer App, tchkada Les PP, tkata pl. Radl III.18; NE tkada Les.

kalxtə : W Kam only; kalta Erman NW, kalxtén Radl IV.33; perhaps = kətxə, cf. above.

4.2. HIP.

txənmə : in all Kam dialects (if W Kam xč = NE, S Kam tx); NE txanmanod Radl II.72, txinmind, pl. txinmanod Radl II.73; S txalmyl, pl. txilmat Radl III.17; W xčenmyn, pl. xčenmend Radl IV.9; cf. **4.4** below.

4.3. KNEE.

šezə : in all Kam dialects; NE šozo, pl. šuzed Radl II.70,71, sožogenno *poples* Radl II.71 (cf. tłogenno *elbow* Radl II.78); S čezokoč, pl. čezłoxon Radl III.3, tsizat pl. Radl III.18; W šežen, pl. šizin (sic) Radl IV.71, sézeŋ, pl. sízīn, sézxal *up to the k.* JK 1.2: 6 *et al.*

ŋèsèŋ : W Kam Steb Xar 143 only.

4.4. SOLE.

(ə)čeŋ : in all Kam dialects; NE segč, pl. send (ŋ > g before č; ŋ > n before d) Radl II.67; S ačangen, pl. ačanid Radl III.1; W ečenčin Radl IV.19; cf. čenmyn *tibia* Radl IV.15.

5.1. BELLY, STOMACH, etc.

kəjl(i)tq : NE and W Kam; NE kolid Kraš NE, k-khailita Les, kailit Erman NE, kojlisx *stomach* Radl II.50; W kaltki Kraš W, k'eltx Radl IV.38, kyl'tk Tju Mor 480, kal'kt (sic) Tju Vor 509, qeltq JK 2, kojłysin adj. Radl IV.44, kojlitxč *stomach* Radl IV.56.

kso(l)x : S and W Kam; S ksux Kraš S, k-soch Sauer App, ksuxa *stomach* Radl III.11, ksox *bladder ibid.*; W kšulx *bladder* Kraš W, ksolx, ksalx, dimin. ksá]xacex *belly, bladder* JK 2.

šuž : NE and S Kam; NE sozx, dimin. sozxčič Radl II.69, šužič' *intestines* Kraš NE, čužečuz, pl. čuzed *idem* Radl II.13, perhaps išurju *bladder* Kraš NE; S seuzit *intestines* Radl III.15, perhaps syxšid *idem* Kraš S; cf. W Kam šihəž below.

šihəž *intestines* : W Kam only; sygyžim Kraš W, šižin Radl IV.72, šihaš Tju Bel 2 504, sígiz, pl. sígizin *gut, hose, pipe* JK 1.2:6, sigizin pl. dimin. sigizcex JK 2; probably = NE and S Kam šuž, cf. above.

nanq : W Kam only; nank Radl IV.57, rerenanq, rerenank JK 2, pnank Tju Bel 2 504, nanq Steb Xar 144, nanqgeleka *for the sake of your guts* JK 2.35: 4.

talezox : S Kam Radl III.17 only.

elkuaj *bladder* S Kam Kraš S only.

5.2. HEART.

luŋ : in all Kam dialects; NE *guluk (< lugulug < luŋuluŋ), gullugu Kraš NE, guillioun Les, gulg, gulk, guluk Radl II.23; S *nujuk (< lunujuk < luŋuluŋ?), nuujugu Kraš S, nókguek Sauer App, nuju Radl III.14; W *luŋ, lugolguč' Kraš W, linłgyč, łynłłyč Radl IV.51, 52, luŋuluŋuc Skorik K voprosu 27, luŋuluŋulc Steb 86.

nita *heart, mind* : W Kam only; nitaa *memoria, mens* Radl IV.59, nita, nita: JK 2, nétanke *into the mind* JK 2.19: 1.

5.3. LUNGS.

paga : NE and S Kam; NE pagod' pl. Radl II.63; S paagan Radl III.14.

ršö : W Kam only; ršojen pl. Radl IV.66, ršë sing. Tju Bel 2 504, pírseta, pirséta *l. as food* JK 2.9.

5.4. KIDNEYS.

kujru : NE and perhaps S Kam; NE kirud Radl II.46, kujruč, pl. kujrud Radl II.54; S perhaps kina Radl III.10.

tximen : W Kam Radl IV.75 only.

5.5. UTERUS.

pa:z(u)x : in all Kam dialects; NE pazx, pazux Radl II.64; S paazuł Radl III.14; W pacx Radl IV.62.

6.1. MALE GENITALS, TESTICLES.

šak : in all Kam dialects; NE tschakam Erman NE, sakad Radl II.66; S šekedet Radl III.15; W tsxan, pl. šakšak (although redoubling usually marks the sing. in Kamchadal) Radl IV.79, tkan *scrotum* Tju Bel 2 504, sek-sek, pl. skān JK 1.2:5, skzótan JK 1.2: 7.

6.2. PENIS.

kalk : in all Kam dialects; NE kallaka Kraš NE, kallkhann Les, khalk Erman NE; S kalka Kraš S; W kalka Kraš W, kàlk Tju Bel 2 504, kyl'kat Tju Vor 509.

6.3. FEMALE GENITALS.

kuapan : in all Kam dialects; NE kojpion Kraš NE, kouappa Les, kuaipan Erman NE, kèpèm Radl II.38; S kuappan Kraš S; W koapan Kraš W.

ulsx : NE Kam only; ilsx Radl II.25, ülsx Radl II.84.

fańsx : W Kam Radl IV.22 only.

7.1. SKIN.

kułx : in all Kam dialects; NE gyłx *s. on head* Radl II.23; S koo-ogh Sauer App; W kułx, kutč, kułg Radl IV.48, galknan *subtercutaneus* Radl IV.23, perhaps k]wuce] *under the s.* JK 2.

hansx : W Kam only; xańex Radl IV.9, hansf JK 2, hīnsx *flounder's s.* JK 2.

sxilsx : NE Kam only; sxilsx Radl II.67, salsa Les.

sxrud : NE Kam only; sxrud, srud Radl II.67, 69.

xitył : W Kam Radl IV.12 only.

vil *s. on head* : S Kam vilvil Radl III.19 only.

7.2. BONE.

qətxam : in all Kam dialects; NE kotgamtch Les, kotxumč, pl. kotxumd Radl II.52; S t'hamtshoo Sauer App; W chtamon Erman NW, ktxoem, pl. ktxmin Radl IV.47, ktxém Tju Mor 481, q(e)tqam, q(e)txam, qtqmin etc. JK 2, xamtala *to grind bones ibid.*

tek : S Kam tekten, pl. tekat Radl III.17 only.

7.3. RIB.

kamra : NE Kam only; kamrač, pl. kamrad Radl II.33.

xtu : S Kam only; xtuu, pl. xtuda Radl III.4, vtuda pl. Radl III.20; perhaps = xtorel, cf. below.

xtorel : W Kam only; xtoreł Radl IV.13, xtórèl Tju Nap 493, tòrèl Tju Bel 2 504; perhaps = xtu, cf. above.

7.4. FLESH, MEAT.

txal : redoubled in all Kam dialects; NE taltal Erman NE, talt gall Les, txiltxil Radl II.73; S t'haltal Sauer App, tatal Les PP, txatxal Radl III.18; W txaltxal, txiltxil Radl IV.75, txaltxal JK 2, txal'txal' Tju Sop 470, txal-txal, pl. txal'-txal' (sic), adj. txal-txalín JK 1.2: 10.

7.5. VEIN.

šitxl : NE and W Kam; NE sitxl, pl. sitxlid Radl II.69; W šitl, pl. šitlinč Radl IV.72, šikl' Tju Sop 470, sitl', pl. sítɭīn JK 1.2: 6.

tyo : W Kam only; tyote, pl. tyōn JK 1.2: 10 only.

7.6. BLOOD.

Mə(x)le/im : in all Kam dialects; NE bechlem Les, byxim, byxtem, bylim Radl II.6; S mésson Sauer App, misim Radl III.2; W mechim Erman NW, mlxem, mlim Radl IV.55, ml'xím Tju Mor 481, mɭim, mɭem JK 2.

8.1. TEAR.

Maz : in all Kam dialects; NE bazač, pl. bazad Radl II.5; S mizilez, pl. mizad Radl III.12; W mazmałx Radl IV.54, mza:n pl. JK 2.33: 4.

8.2. SALIVA, SPUTUM.

asat mostly *sputum* : in all Kam dialects; NE asat Radl II.3, asastozič *expectorate ibid.*; S asat *sputum* Radl III.2; W ašat *saliva, sputum* Radl IV.7.

Ĭixi *saliva* : S and W Kam; S nixit Radl III.13; W iɭxin JK 2.7:4; cf. kɭxintɭxeqazuknen *he expectorated* JK 2.9: 23; probably = NE Kam deglizič, demchiležič *mucum ejicere* Radl II.14, in which case the common root would be Dixi.

8.3. MUCUS, NASAL.

lean : W Kam only; lean, lehan Radl IV.50, leańaxles *mucum ejicere ibid.*, leaŋ, lean JK 2.

8.4. URINE.

ŋeštem : NE and S Kam; NE gèštem, gistim Radl II.22, 23; S neštem Radl III.13.

txiz : W Kam only; txiltxil Radl IV.75, kamtxizkek *dysuria* Radl IV.34 (qam *not, no*), txeztxez Steb 104, txeizskicen *urinate ibid.*, txiz-txiz JK 1.2: 10, txīztxīz JK 2.13: 7; cf. txaz, txiz *become wet* JK 2.

iikecex *little water* (ii *water*) W Kam JK 2.5: 6 only.

8.5. EXCREMENT.

kelel : in all Kam dialects; NE kèlel Radl II.36, cf. kel *malus, male*, kelelu *malus, turpis* etc. *ibid.*; S kajal, kajalx Radl III.7; W kejłaal Radl IV.37, qélal, qélux, qenɭ *with e.* (< qel + ɭ) JK 2; cf. xálakaplanaŋ *e., dung* ("rarely used") JK 1.2: 13, xalakaplanan (*smells of*) *e.* JK 2.9: 21, xalaplasknan *go to stool ibid.*

INTERNAL DIVERSITY IN UTO-AZTECAN: II

KENNETH HALE
INDIANA UNIVERSITY

4. Under **2.2.** of part I of this paper (IJAL 24.101–7), I cite 50 reconstructions together with their supporting cognates in the daughter languages. Forms which share a single gloss but are either non-cognate, doubtfully cognate or cognate only within one or another intermediate branch (e.g., Plateau Shoshonean, Nahuatlan, Piman) were not given in part I; they are now given below. In order to make the lists immediately useful for further and variant lexicostatistic computation, I integrate the cognate data from **2.2.** with the previously unpublished non-cognates, doubtful cognates and cognates shared only by members of an intermediate branch.

The test list used in this paper is given first in English; each item in the list is numbered for subsequent cross-reference.

(1) *I*, (2) *thou*, (3) *we*, (4) *this*, (5) *that*, (6) *who*, (7) *what*, (8) *not*, (9) *all*, (10) *many*, (11) *one*, (12) *two*, (13) *big*, (14) *small*, (15) *long*, (16) *woman*, (17) *man*, (18) *person*, (19) *fish*, (20) *bird*, (21) *dog*, (22) *louse*, (23) *tree*, (24) *bark*, (25) *leaf*, (26) *root*, (27) *seed*, (28) *blood*, (29) *meat*, (30) *skin*, (31) *bone*, (32) *grease*, (33) *egg*, (34) *horn*, (35) *tail*, (36) *feather*, (37) *hair*, (38) *head*, (39) *ear*, (40) *eye*, (41) *nose*, (42) *mouth*, (43) *tooth*, (44) *tongue*, (45) *claw*, (46) *foot*, (47) *knee*, (48) *hand*, (49) *belly*, (50) *neck*, (51) *breast*, (52) *heart*, (53) *liver*, (54) *drink*, (55) *eat*, (56) *bite*, (57) *see*, (58) *hear*, (59) *know*, (60) *sleep*, (61) *die*, (62) *kill*, (63) *swim*, (64) *fly*, (65) *walk*, (66) *come*, (67) *lie*, (68) *sit*, (69) *stand*, (70) *give*, (71) *say*, (72) *sun*, (73) *moon*, (74) *star*, (75) *water*, (76) *rain*, (77) *stone*, (78) *sand*, (79) *earth*, (80) *cloud*, (81) *smoke*, (82) *fire*, (83) *ash*, (84) *burn*, (85) *path*, (86) *mountain*, (87) *red*, (88) *green*, (89) *yellow*, (90) *white*, (91) *black*, (92) *night*, (93) *hot*, (94) *cold*, (95) *full*, (96) *new*, (97) *good*, (98) *round*, (99) *dry*, (100) *name*.

The Swadesh reduced or 100-word test list is given below in 19 Uto-Aztecan languages (including three, Pima Bajo, Varohio, and Pipil, which were not included in part I of this paper). Sources of data and indications of orthographic conventions are noted in footnotes for each language.

4.1. NORTHERN PAIUTE:[1] (1) nɨ́i, (2) ʔɨ́i, (3) támí, (4) ʔii-, (5) ʔuu-, (6) háqá, (7) hí-, (8) qa-, (9) nóoʔyini, (10) ʔìwáiʔiw, (11) sɨ́ŋʷiʔi, (12) wàháʔiw, (13) qàpá, (14) tɨ́iciʔi, (15) ʔudɨ́cìʔi, (16) mòqóni, (17) nànáɨ, (18) nɨ́wí, (19) pàkʷí, (20) huzívaʔa, (21) sàdɨ́i, (22) ——, (23) wìnɨ́di, (24) póʔá, (25) sɨ́aqa, (26) ——, (27) ʔapúi, (28) pɨ́ipi, (29) tùkú, (30) pɨ́hí, (31) ʔóhó, (32) čúhú, (33) nòhó, (34) ʔáa, (35) kʷàsí, (36) qásá, (37) kʷóo, (38) cùpígi, (39) nàqá, (40) púi, (41) múví, (42) tìpá, (43) tàmá, (44) ʔìxó, (45) sìdú, (46) kìkí, (47) mɨ́awò, (48) máai, (49) qóhí, (50) kùtá, (51) pìvíʔi, (52) pìwí, (53) nɨ́wí, (54) hívi, (55) tìká, (56) kɨ́i, (57) púní, (58) nàqá, (59) sùpídakʷutu, (60) ʔìʔwí, (61) yàʔí, (62) nàvása, (63) páháviù, (64) ——, (65) mía, (66) kímá, pítɨ́, (67) háví, (68) qàtí,

[1] The Northern Paiute list is taken from a tape of Swadesh's Penutian Survey List in the Archives of the Languages of the World, Indiana University (hereinafter cited as 'the Archives').

The orthographic convention regarding the consonants needs no special mention; the following remarks are made regarding the vowels: /V̂/ is high-toned, stressed; /V̀/ is low-toned, stressed; /V/ (unmarked) is low-toned, unstressed appearing as voiceless [V̥], between a voiceless consonant and a following /#/ (contour final juncture) or voiceless consonant, and as fully voiced [V], when contiguous to vowels or voiced consonants.

(69) wíní, (70) gía, (71) tíiko?i, (72) tàvá, (73) mìhá, (74) páatuzuva, (75) páa, (76) páawa(vi), (77) tìpí, (78) pàhódivi, (79) tíipi, (80) kúmíva, (81) kʷíida, (82) xòsó, (83) tùníhìvi, (84) náipi, (85) póo, (86) qáiva, (87) ?acá-, (88) puhí-, (89) ?uhá-, (90) tuhá-, (91) tuhú-, (92) tùqáan, (93) ?idíti, (94) ?izíci, (95) qáano?i, (96) ——, (97) plžá?i, (98) tàcípònò, (99) pàsápi, (100) nanía.

4.2. SOUTHERN PAIUTE:[2] (1) ni?, (2) im·i-, (3) taŋwa-, (4) ?i-, (5) ai-, (6) aŋa-, in·i-, (7) impi-, (8) qa, (9) man·ɔ, (10) páiya-, (11) šo·-, (12) wa·-, (13) ava?-, (14) mia?-, (15) pa?atəɣɔ-, (16) mam·a?u-, (17) taŋ?wa-, (18) niŋwi-, (19) paɣi-, (20) wici?-, (21) sari·-, (22) pɔ?a-, (23) ——, (24) así?a, (25) naŋqavi-, (26) ——, (27) pu?i-, (28) pai-, (29) tuq·ua-, (30) así?a, (31) ɔɔ-, (32) yuú-, (33) ——, (34) ?a·p·i, (35) qwas·i-, (36) wiš·ia-, (37) páix·I, (38) toc·, (39) naŋqava, (40) pú?i-, (41) muvi-, (42) tímpA, (43) táŋwA, (44) áx·ɔ, (45) šiču-, (46) nampa-, (47) taŋa-, (48) mɔ?ɔ-, (49) sapi-, (50) qura, (51) piici-, (52) piyɬ-, (53) niŋwi-, (54) iví, (55) tiqa-, (56) qi?i-, (57) pin·i-, (58) naŋqa-, (59) pučúčuɣwa-, (60) ?apii-, (61) ya?a, (62) paq·a-, (63) naváq·i-, (64) nɔncí, (65) paɣi-, (66) píči-, (67) aví, (68) qari-, (69) win·i, (70) maɣa-, (71) ái-, (72) tava-, (73) miá-, (74) pú·ci-, (75) pa·, (76) uŋwá-, (77) tímpI, (78) at·á-, (79) tivi-, (80) paɣína-, (81) qwi·, (82) qúna, (83) quča-, (84) na?ai-, (85) pɔ·, (86) qáiva, (87) aŋqa-, (88) saɣwa-, (89) ɔá-, (90) tóša-, (91) to·-, (92) tuxwá-, (93) ta-ru?ii, (94) ši-, (95) pɔn·ɔ?a-, (96) ái-, (97) ?át·ɬ, (98) pɔt·ɔ-, (99) tavašu·, (100) niá·-.

4.3. UTE:[3] (1) ní?, (2) ?ími, (3) nímí, támi, (4) ?íči, (5) mára, (6) ?áa, (7) ?ípa, (8) káči, (9) manínì, (10) ?ván?àri, (11) síwìsi, (12) wáinì, (13) ?aváti, (14) mí?pùči, (15) pa?átoɣòti, (16) mamáči, (17) ta?wáči, (18) núučiwi, (19) paɣíi, (20) wíčìči, (21) saríiči, (22) pô?aviw, (23) sôàpi, (24) ——, (25) nìká?yàvi, (26) ?öá?yà, (27) pí?íavi, (28) páapi, (29) tukúavi, (30) tukú?wàa, (31) ?öövi, (32) yuúvi, (33) naqánàhpàvi, (34) ?áapi, (35) kʷísi, (36) kʷisí?àa, (37) tačívì?àa, (38) táči, (39) nìkávi, (40) pi?ívi, (41) mövôtö̂?ö, (42) típa, (43) táwa, (44) ?aɣôvi, (45) čičúvi, (46) nápa, (47) táa, (48) mô?ö, (49) saɣô?yàa, (50) kúra, (51) níavi, (52) muɣúavi, (53) núupu, (54) ?iví, (55) tikái, (56) kí?i, (57) maaí, (58) nìkái, (59) pučúčuɣʷài, (60) ?apíi, (61) ya?á, (62) paqáu, (63) navákii, (64) yìčí?i, (65) paɣái?wài, (66) kía, (67) ?àví, (68) karí, (69) wìní, (70) -ruɣʷàaqa, -màyà, (71) ?aíki, (72) taváči, (73) maátoɣòči, (74) púučìvi, (75) páa, (76) ?ùwári, (77) tìpíči, (78) sùwávi, (79) tìvípi, (80) pàyínàvi, (81) kʷiívi, (82) na?áiti, (83) ?ukʷívi, (84) ná?i, (85) pôö, (86) káiva, (87) ?ikáyàri, (88) sàqʷákàri, (89) ?öáqari, (90) sáqari, (91) túkʷari, (92) tuɣʷáni, (93) kʷučíi, (94) sipírari, (95) kʷíikʸà, (96) ?áaɣari, (97) tí?ài, (98) pôötuqʷavi, (99) tavásìpi, (100) níàvi.

4.4. SHOSHONE:[3] (1) ní?, (2) ?í?, (3) táwi, (4) ?éti, ?éši, (5) ?ósi, (6) hákara, (7) híi?i, híni, hákani, (8) ke, (9) ?óyòku, (10) sónti, (11) símí?i, (12) wáhàti, (13) pianti, (14) tíiti, (15) kíbirayo, (16) wá?ipì?i, (17) téna, (18) nímí, (19) pénkʷi, (20) kʷín?à?a, (21) tóka, sáarì?a, (22) púsi?àci, (23) ——, (24) ——, (25) ——, (26) ——, (27) ——, (28) pípi, (29) kúči, (30) túku, (31) cúnhi, (32) yúhu, (33) nóyo, (34) ?áa?a, (35) kʷási, (36) kása, (37) pámpi, (38) pámpi, (39) nánkih, (40) púlh, (41) múpi, (42)

[2] Edward Sapir, The Southern Paiute Language, Proceedings of the American Academy of Sciences, 65.1-730 (1930). Sapir's transcription is retained except for the following modifications: (original) c = (is rewritten here as) š; tc = č; ts = c; '(apostrophe) = ?; ɪ = i.

[3] The Ute and Shoshone data are taken from tape recorded material of my own, now in the archives. The vowels are treated as follows in a preliminary phonemic analysis made of the material: /V̂/ = vowel with primary stress; /V̀/ = vowel with secondary stress; /V/ (unmarked) = vowel with weak stress appearing as fully voiceless [V̥], between a consonant and a following / ʷ / or voiceless consonant, and as voiced [V] elsewhere.

tímpi, (43) táma, (44) ʔékʷa, (45) másìtu, (46) námpi, (47) tánàpih, (48) móʔo, (49) sápah, (50) tóyo, (51) nínàpih, (52) píhi, (53) nímiʔa, (54) hípi, (55) tíka, (56) kícíʔa, (57) púiʔi, (58) nánka, (59) símponaʔina, (60) ʔipíihu, (61) tíyàni, (62) pékahu, (63) páhàpi, (64) yíci, (65) míʔà, (66) kíma, (67) hàpí, (68) kári, (69) wíni, (70) ʔútu, -maga, (71) yɨkʷi, (72) tábi, (73) míʔa, (74) tácìni, (75) páaʔa, (76) páʔimih, (77) tímpi, (78) pásiwʔampi, (79) sókobi, (80) págʷanʔumbi, (81) kʷípi, (82) kúna, (83) kúcìʔàpi, (84) wéhápìni, (85) póʔe, (86) tóyàpi, (87) ʔénkabiti, (88) púhibiti, (89) ʔóhàpiti, (90) tósàbiti, (91) túhubiti, (92) túganika, (93) ʔírìʔika, (94) ʔícìʔika, (95) tipéʔigàka, (96) ʔígiblča, (97) cáʔi, (98) ——, (99) tásàpi, (100) nániha.

4.5. Comanche:[4] (1) níʔ, (2) ʔɨ, (3) nímí, támí, (4) ʔísi, (5) ʔósi, (6) hákari, (7) hákai, (8) ké, (9) ʔóyetɬ, (10) sóo-, (11) símíʔ, (12) wáhah-, (13) píapɬ-, (14) tíe-, (15) páʔatɬ, (16) wáʔihpiʔ, (17) ténahpiʔ, (18) nɨ́mɬ, (19) péekʷi, (20) huhcúuʔ, (21) sárii?, (22) ——, (23) húuhpI, (24) póʔa, (25) ——, (26) ——, (27) ——, (28) ——, (29) tɨ́hkapɬ, (30) póʔa, (31) cúhnipɬ, (32) yúhU, (33) nóʔi, (34) ʔáa-, (35) kʷásI, (36) ——, (37) pápI, (38) páapI, (39) nákI, (40) púih, (41) múupI, (42) tɨ́ipE, (43) táamA, (44) ʔéekO, (45) ——, (46) ——, (47) ——, (48) móʔO, (49) sápɬ, (50) tóyopɬ, (51) ——, (52) píhI-, (53) ——, (54) híbi-, (55) tɨ́hka-, (56) kíh-cia-, (57) púniʔ, (58) ——, (59) ——, (60) ʔáhpii, (61) tíyaai-, (62) péhka-, (63) páhabi-, (64) yicíʔI, (65) míʔaarɬ, (66) kímA, (67) háavI, (68) káarɬ, (69) wíni-, (70) ʔútU, (71) yɨ́hkʷi-, (72) táabE, (73) mía, (74) tásinup, (75) páa, (76) ʔímah-, (77) tɨ́ipI, (78) páasiwapI, (79) sókoobI, (80) ——, (81) kʷípɬ, (82) kóhtoopɬ, kúunA, (83) ʔétɬsipɬ-, kúsipɬ, (84) ——, (85) púʔE, (86) tóyaabI-, (87) ʔéka-, (88) ʔébi, (89) ʔóha, (90) tósa-, (91) túhupI, (92) túkaanI, (93) ——, (94) ——, (95) tɨ́hpeʔ-, (96) ——, (97) cáa-, (98) ——, (99) pásapI, (100) náhnia-.

4.6. Tubatulabal:[5] (1) nɨ́k, (2) ʔimbí, (3) ʔiŋgílaʔaŋ, (4) –ɨ·, (5) wáʔ, ʔundúk, (6) ʔagí, (7) hái-, (8) háš, (9) píniyu, (10) yó·wi, (11) čɨ́·č, (12) wó·, (13) ʔegé·wa, (14) kúʔužubil, (15) ʔutudu, (16) kó·imi, (17) tá·twal, (18) nimi-, (19) kuyú·l, (20) čikí·t, (21) púkubišt, (22) nahá·l, (23) ʔú·ʔut, (24) ——, (25) náŋhabi·l, (26) wɨ́·ši-, (27) punʒi-, (28) ʔikʷa-, (29) tuguwá-, (30) pó·nt, (31) ʔó-n, (32) wípt, (33) pómt, (34) ʔá·wa, (35) wiši·-, (36) ʔaŋá·, (37) cóm·o·-, (38) kupu-, (39) náŋha-, (40) punʒi-, (41) mupít, (42) toʔogo-, (43) tamánt, (44) lalánt, (45) šúlun-, (46) ʔiŋgí-, (47) tóŋo·-, (48) má·-, (49) šapu-, (50) kula·-, (51) pí·l, (52) šú·nal, (53) ni·ma-, (54) ʔɨ·ʔ-, (55) tɨ́k-, (56) kɨ́·ʔ-, (57) tá·wig-, (58) háʔ-, (59) má·g-, (60) culú·m, (61) mú·g, (62) míʔig-, (63) páiʔiž-, (64) ʔó·l-, (65) miyá-, (66) kím-, (67) tambi·l, (68) yánʒ-, halɨ́-, (69) winɨ́-, (70) maha-, (71) piŋgí-, (72) tá·l, (73) mɨ́·yabišt, (74) šú·l, (75) pá·l, (76) táŋ-, (77) tínt, (78) šɨ́·hpit, (79) šuwá·l, (80) pá·šu·mišt, (81) ʔú·iyan, (82) kú-, (83) tú·l, (84) ——, (85) póht, (86) muwá·l, (87) mélʔmel, (88) húlʔhul-, (89) ——, (90) pó·ši-, (91) tú·ga, (92) tú·gal, (93) ʔɨ·di·ʔ-, (94) šɨ́·b-, (95) pɨ́·m-, (96) mápita-, (97) tɨ́wi, (98) ——, (99) wá·g-, (100) tiŋʷá-.

4.7. Cahuilla:[6] (1) néʔ, (2) ʔé, (3) čemem, (4) ʔívʔi, (5) péʔ, (6) háxi, (7) híča, (8) kíʔi, (9) ʔuʔman, (10) métečim, (11) súpli, (12) wíh, (13) ʔámnawut, (14) ʔíniš, (15) ——, (16) níčil, (17) náxaš,

[4] Joseph B. Casagrande, Comanche Linguistic Acculturation, IJAL 20.140–151, 217–237, 21.8–25 (1954–1955); Elliot Canonge, Comanche Texts, University of Oklahoma, 1958.

[5] Charles F. Voegelin, Tübatulabal Grammar, UCPAAE 34.55–190 (1935); C. F. Voegelin, Working Dictionary of Tübatulabal, IJAL 24.221–7 (1958). The transcription used here agrees with that used by Voegelin in his Working Dictionary.

[6] A. L. Kroeber, Shoshonean Dialects, CPCAAE 8.235–269 (1909); tapes collected by C. F. Voegelin and by Hans Jakob Seiler, deposited in the Archives of the Languages of the World, Indiana University.

(18) táxlišwit, (19) kíyul, (20) wík?ikmal, (21) ?áwal, (22) qó?am, (23) qélawat, (24) sáw?a, (25) ——, (26) púk?u, (27) púš, (28) ?éwal, (29) ——, (30) sáw?a, (31) té?i, (32) wí, (33) wéw?u, (34) ?áw?a, (35) kʷás, (36) wák?a, (37) yúluka, (38) yúluka, (39) náq?a, (40) púš, (41) mú?, (42) tám?a, (43) tám?a, (44) náŋ, (45) sál?u, (46) ?í?, (47) tám?i, (48) má?, (49) tí?i, (50) qíl?i, (51) pí?ih, (52) sún, (53) ném?a, (54) pá?i, (55) wayaki, (56) ké?, (57) pé?i, (58) náqvoqa, (59) peé?naxa, (60) kúp, (61) múk?i, (62) méka, (63) ?á?asxem, (64) híŋ-, (65) híči?, (66) ——, (67) ?ipantačawe, (68) hiukʸal, (69) táwiš-, (70) máxqa, (71) yáxe, (72) támiat, (73) ménil, (74) sú?wet, (75) pál, (76) wéwnis, (77) qáwis, (78) ŋáčiš, (79) témal, (80) wéwnis, (81) mí?at, (82) kút, (83) níšxiš, (84) kénava, (85) pít, (86) qáwiš, (87) sel-, (88) túkwiš-, (89) téset-, (90) téwiš, (91) tul, (92) túkmiat, (93) síwma, (94) yúyma, (95) témiŋ, (96) páŋniš, (97) ?áča?, (98) ——, (99) wáxiš, (100) téw.

4.8. Hopi:[7] (1) ni?, (2) ?ím, (3) ?ítam, (4) ?í·?i, (5) pam, (6) háki, (7) hí·ta, (8) qa, (9) só·soyam, (10) ká·sta, (11) sí·ka, (12) lô·yöm, (13) wí·ko, (14) cá·ko, (15) wí·pa, (16) wí·ti, (17) tá·qa, (18) síno, (19) pá·kiw, (20) círo, (21) pó·ko, (22) ?áti, (23) cóki, (24) cí·pi, (25) ná·pi, (26) ná-, (27) pó·si, (28) ?íŋʷa, (29) síkʷi, (30) cí·pi, (31) ?ô·qa, (32) wí·-, (33) nôhi, (34) ?á·la, (35) síri, (36) nákʷa, (37) hô·mi, (38) qôytö, (39) náqvi, (40) pó·si, (41) yáqa, (42) mó?a, (43) táma, (44) léŋi, (45) sóki, (46) kíki, (47) támö, (48) má, (49) póno, (50) kʷá·pi, (51) pí·hi, (52) ?ináŋʷa, (53) ní·ma, (54) hí·ko, (55) sówa, (56) kí·ka, (57) yóri, (58) navóta, (59) navóta, (60) pí·wi, (61) mó·ki, (62) ní·na, (63) momóri, (64) pí·yalti, (65) wá·ynima, (66) píti, (67) qá·ci, (68) qáti, (69) wíni, (70) máqa, (71) kíta, (72) tá·wa, (73) mí·yawi, (74) só·hi, (75) pá·hi, (76) yó·ki, (77) ?ówa, (78) tí·wa, (79) tíckʷa, (80) ?ó·mawi, (81) kʷí·ciŋʷi, (82) qôyöhi, (83) qôcvi, (84) ?íwi, (85) pôhi, (86) tí·kʷa, (87) pá·laŋpi, (88) sakʷá-, (89) síka, (90) qô·yca-, (91) qômvi-, (92) míhi, (93) ?íti, (94) ?iyóho, (95) ?ó·po-, (96) pí·hi, (97) lóloma, (98) pölâŋpi, (99) lá·qi, (100) tíŋʷi.

4.9. Papago (Pima):[8] (1) ?áanʸi?I, (2) ?áapi?I, (3) ?aačim, (4) ?íida?A, (5) híga?I, (6) híḍai, (7) ṣáaču, (8) pi, (9) wíis, (10) mú?I, (11) hímako, (12) góok, (13) gí?i, (14) čím (?alI há?ačiž), (15) číw, (16) ?úwI, (17) číož, (18) ?ó?odham, (19) wátopI, (20) ?ú?uhig, (21) gógs, (22) ?áa?ač, (23) ?úus, (24) ?ílidag (25) háahag, (26) tátk, (27) kái, (28) ?íi?iḍ, (29) čúukug, (30) ?ílidag, (31) ?óo?o, (32) gíigI, (33) nónha, (34) ?á?ag, (35) báhI, (36) ?á?an, (37) mó?O, (38) mó?O, (39) náak, (40) wúhI, (41) dáak, (42) činʸ, (43) táatam, (44) nʸíinʸ, (45) húuč, (46) táḍ, (47) tóon, (48) nówI, (49) wóok, (50) kúswo, (51) wípi, (52) ?íibdag, (53) nʸím, (54) ?í?I, (55) húg, (56) kí?I, (57) nʸíid, (58) káa, (59) máač, (60) kóoṣ, (61) múukI, (62) mú?A, (63) wáčwi, (64) dá?A, (65) hím, (66) žíiwia, (67) wó?O, (68) dáhA, (69) kíik, (70) máak, (71) čí?I, (72) táṣ, (73) máṣad, (74) hú?u, (75) ṣúudagI, (76) žúukI, (77) hódai, (78) ?ó?oḍ, (79) žíwtiḍ, (80) číiwagI, (81) kúubs, (82) tái (náada), (83) mátai, (84) míhI, (85) wóog, (86), dú?ag, (87) wígI, (88) číidagI, (89) ?úam, (90) túhA, (91) čúk, (92) čúhug, (93) tónʸ, (94) híipid, (95) ṣúud, (96) wíčiž, (97) ?áp, (98) ?ólas, (99) gákI, (100) číigig.

4.10. Pima Bajo:[9] (1) ?áni?i, (2) ?ápi?i, (3) ?áatim, (4) ?ídi, (5) hí?igi, (6) ——, (7) ——, (8) pi(m), (9) ——, (10) mú?idi, (11) mádo, (12) góki, (13) gí?idi, (14)

[7] Charles F. Voegelin and Florence M. Voegelin, Hopi Domains, IUPAL memoir 14 (1957).

[8] Papago and Pima data are taken from my own materials on tape and in the archives; non-cognate Pima forms are given in parentheses following the Papago form.

[9] The Pima Bajo list is taken from a short dictionary collected by Jean B. Johnson and made available to me by Edward Spicer, University of Arizona. The following orthographic changes were made: (original) š = (is rewritten here as) ṣ; ʌ = i; V· = VV; j = h.

típirik, (15) tívidi, (16) ʔóks, (17) tíodi, (18) ——, (19) músiik, (20) ʔúvigi, (21) gógs, (22) ʔáaʔati, (23) ṣáʔi, (24) ——, (25) háhagi, (26) tátki, (27) káhi, (28) ʔíʔiti, (29) háivan, (30) ʔíridagi, (31) ʔóʔo, (32) ——, (33) nóno, (34) ʔáʔagi, (35) báhidi, (36) ʔáʔanagi, vóopo, (37) móʔo, (38) móʔo, (39) náki, (40) vúhi, (41) dáki, (42) tín, (43) tátam, (44) nín, (45) húuti, (46) tátipúkṣ, (47) tón, (48) nóv, (49) vóki, (50) váiki, (51) vípi, (52) ʔíibdagi, (53) ním, (54) ——, (55) ——, (56) ——, (57) ——, (58) ká, (59) mát, (60) ——, (61) múki, (62) ——, (63) ——, (64) ——, (65) ʔóimiḍi, (66) dívia, (67) ——, (68) ——, (69) ——, (70) ——, (71) tíhi, (72) táṣ, (73) máṣaadi, (74) síʔowagi, (75) ṣúdagi, (76) dúuki, (77) hóhodi (pl.), (78) ——, (79) dívidi, (80) tíivagi, (81) ——, (82) táhi, (83) mátai, (84) míhi, (85) vóogi, (86) dóʔagi, (87) ——, (88) tídog, (89) ʔóam, (90) tóa, (91) túki, (92) tíngam, (93) tóniʔi, (94) híip, (95) kóv, (96) ——, (97) ——, (98) ——, (99) gáki, (100) ——.

4.11. TEPECANO:[10] (1) ʔáni, (2) ʔápi, (3) ʔátiv, (4) hídi, (5) híga, (6) hárov, (7) háastu, (8) yam-, (9) víis, (10) múiʔ, (11) hímad, (12) góok, (13) gíʔ, (14) ʔári, (15) tív, (16) ʔúv, (17) tíod, (18) ——, (19) vátop, (20) ——, (21) gógoš, (22) ——, (23) ʔúuš, (24) ——, (25) ——, (26) ——, (27) ——, (28) ——, (29) túhuk, (30) ʔíʔir, (31) ʔóʔo, (32) ——, (33) ——, (34) ʔáʔag, (35) bái, (36) šívod, (37) kúpa-, (38) móʔ, (39) ——, (40) vúʔi, (41) ——, (42) tín, (43) tám, (44) nín, (45) ——, (46) tóon, (47) ——, (48) nóv, (49) vóok, (50) kušuá, (51) ——, (52) húr, (53) ——, (54) ʔí, (55) húg, (56) kíʔ, (57) tíg, (58) kái, (59) máat, (60) kóos, (61) múk, (62) míʔak, (63) gígsi (continuative), (64) dá, (65) ʔóimir, (66) dúvia, hím, (67) vóʔ, (68) dá, (69) ——, (70) mák, (71) tí, kái, (72) tónor, (73) ——, (74) húvva, (75) šúudi, (76) dúuki, (77) hódaai, (78) ——, (79) bíd, (80) tíivag, (81) ——, (82) tái, (83) ——, (84) míi, (85) vóoi, (86) ——, (87) wíig, (88) tídog, (89) ʔóam, (90) tá, (91) túk, (92) kágdam, (93) tón, (94) hípid, (95) súud, (96) ——, (97) ʔáp, (98) ——, (99) ——, (100) tíg.

4.12. YAQUI (MAYO):[11] (1) ʔinépo, (2) ʔémpo, (3) ʔitépo, (4) ʔií, (5) wakáʔa (húʔu), (6) habésa, (7) híta, (8) kaá, (9) siʔíme, (10) buʔúm (hwéebena), (11) seénu, (12) woím, (13) bʷeʔú, (14) ʔilíčči, (15) téebe, (16) hamút, (17) ʔoʔóu, (18) persóna (yoréme), (19) kúčču, (20) wiíkit, (21) čuúʔu, (22) ʔétte, (23) píino (huíya), (24) ʔéčimu, (25) sáuwa, (26) naáwa, (27) báčia, (28) ʔóhbo, (29) wáakas (tékwa), (30) béa, (31) ʔótta, (32) mánteeka, (33) kábba, (34) ʔáaʔam, (35) bʷássia, (36) plúuma (bóuwa), (37) čoónim, (38) kóba, (39) nákkam, (40) puúsim, (41) yékka, (42) teéni, (43) támmim, (44) nínni, (45) súttum, (46) wókkim, (47) tónnom, (48) mámmam, (49) tommá (tóppa), (50) kutánaa, (51) píppim (táuwi), (52) hiápsi, (53) héemam, (54) baáhiʔine, (55) híʔibʷane, (56) kíʔine, (57) bíča, (58) híkkaine, (59) táʔaane, húʔuneya, (60) kóče, (61) muúke, (62) méʔa, (63) bahúme, (64) níʔine, (65) weéye (werama), (66) weéye (ʔaʔábo), (67) bóʔo, (68) yesné, (69) kikné, (70) makné, (71) yuʔúne (hiáwa), (72) taáʔa, (73) meéča, (74) čókki, (75) baáʔam, (76) yúke, (77) tétta, (78) seéʔe, (79) bʷíya, (80) náamu, (81) bʷíččia, (82) táhi, (83) ʔóbbam (náposa), (84) beétine, (85) bóoʔo, (86) kawím (87) síkki, (88) siéri, (89) husái (sawáli), (90) tóssai, (91)

[10] J. A. Mason, Tepecano, a Piman Language of Mexico, Annals of the New York Academy of Science, 25.309–416 (1916). The following orthographic changes were made: (original) ö = (is rewritten here as) i; V·, C· = VV, CC; B, D, G = b, d, g.

[11] The Yaqui data is taken from a tape collected by Gerd Fraenkel, now in the archives; it was collected at Pascua Village, Tucson, Arizona. The non-cognate Mayo forms (given in parentheses following the Yaqui form) are from a Swadesh list collected by Howard Collard and J. Dedrick and made available to me by Stanley S. Newman, University of New Mexico. Most Yaqui nouns are given here with the plural suffix -m; most verbs with the future suffix -ne.

čukúi, (92) tukária, (93) tátta (súkka), (94) sébbe, (95) tapúni, (96) beméla, (97) tu?í, (98) lobólai (tékolai), (99) wakía, (100) téam.

4.13. TARAHUMARA:[12] (1) nehé, (2) muhé, (3) tamuhé, (4) iyé, (5) éči, (6) éruká, (7) píri, (8) ká, (9) šuwába, (10) weká, (11) biré, (12) okwá, (13) wa?rú, (14) ku?tá, (15) wi?rí, (16) mukí, (17) rehoí, (18) rehói, (19) ročí, (20) čurugí, (21) okočí, (22) té, (23) kuší, (24) wičíra, (25) sawá-, (26) nawá, (27) raká, (28) rá, (29) sa?pá, (30) wičíra, (31) očí, (32) wi?í, (33) ga?wá, (34) a?wá, (35) waší, (36) masá, (37) gupá, (38) mo?ó, (39) naká, (40) buší, (41) aká, (42) riní, (43) ramé, (44) ča?mérawa, (45) šútu, (46) ronó, (47) čokóba, (48) seká, (49) rapá, (50) gutá, (51) či?wá, (52) surá, (53) imá, (54) bahí, (55) gumí, gó?, (56) i?kí, (57) mačí, ?ne, (58) aké, (59) mačí, (60) gočí, (61) mukú, (62) mi?rí, (63) anáye, (64) iní, (65) enáro, (66) noriná, nawá, (67) bo?wí, (68) asá, (69) wirí, (70) á, (71) aní, (72) rayénari, (73) mečá, (74) sopóri, (75) ba?wí, (76) ukuí, (77) reé, (78) saté, (79) we?yé, (80) norí, (81) mo?rí, (82) na?í, (83) napisó, (84) rahá, (85) bo?wé, (86) gawí, (87) šitákame, (88) siyónarne, (89) sawaróame, (90) rosákame, (91) čókame, (92) rokó, (93) ratá, (94) rurá, (95) bočí, (96) bukurí, (97) ga?rá, (98) čitúrame, (99) wakicéame, (100) re?wé.

4.14. VAROHIO:[13] (1) nee?é, (2) muu?ú, (3) teemé, (4) hihí, (5) ——, (6) haatána, (7) ——, (8) ——, (9) yoomá, (10) wekáhu, (11) piré, (12) gohká, (13) weerú, (14) pohčí, (15) tepihkúma, (16) ho?owíduáme, (17) tíhoyé, (18) ——, (19) so?očí, (20) tú?učuhkí, (21) čuhčúri, (22) ——, (23) ——, (24) ——, (25) sawará, (26) naawará, (27) pahčirá, (28) heerá, (29) sa?apá, (30) wi?ičí, (31) hó?owa, (32) ——, (33) ka?wá, (34) ——, (35) wahsirá, (36) ma?asá, (37) kupá, (38) mo?ó, (39) náhka, (40) puusí, (41) yahká, (42) téeni, (43) táami, (44) yeení, (45) suhtú, (46) taará, (47) čopokori, (48) seeká, (49) tohpá, (50) kuhtá, (51) tawiráči, (52) sulá, (53) heemá, (54) ——, (55) kókománe, (56) ki?iki, (57) ne?né-, (58) hínamóna, (59) naane?eré-, (60) koči-, (61) múke-, (62) méri-, (63) ——, (64) ni-, (65) hó?i-, (66) héna-, (67) ——, (68) yahsá, (69) ——, (70) -yá, (71) tuké-, (72) tahá, (73) meehčá, (74) só?oporí, (75) ba?wí, (76) yuukí, (77) tehté, (78) saté, (79) ——, (80) toomúari, (81) ——, (82) na?í, (83) náapisó, (84) tahá-, (85) po?owé, (86) kaawí, (87) sehtáname, (88) siyóonani, (89) sawáeme, (90) tohsánani, (91) ?ohčónani, (92) túkawári, (93) tahtá, (94) tuurawá, (95) pósanímu, (96) ——, (97) kawehú, (98) ——, (99) wakiná, (100) ——.

4.15. CORA:[14] (1) ni, (2) mua, pa, (3) ta, (4) hi, (5) ?amume, (6) haní, (7) haiki, (8) ka, (9) hačú, (10) muí, (11) sai, (12) wapo, (13) ve, (14) kilen, (15) titin, (16) ri·ta, (17) ta·ta, (18) tevi, (19) sa·sa, (20) pina, (21) čiI, (22) ——, (23) kiyé, (24) ——, (25) šamoi, (26) ——, (27) ——, (28) šu·re, (29) waira, (30) ——, (31) ?ika, (32) ——, (33) ta?u, (34) ?awa-, (35) k^{w}asi, (36) muve, (37) kipoá, (38) muú, (39) našái, (40) hisi, (41) cu, (42) teni, (43) tame, (44) nanu, (45) šité, (46) ?ika, (47) tunú, (48) moáka, (49) ——, (50) kipí, (51) tabi, (52) saniúkari, (53) ——, (54) ?i (55) k^{w}a, (56) če-, (57) si, (58) naka-, (59) m^{w}aree, (60) kucu, (61) mue, (62) me, (63) ka?ve, (64) ?anaviste, (65) me, (66) weme, (67) moa, (68) kateI, (69) ——, (70) tapiI, (71) sa, (72) tawni, (73) maškirai, (74) šureabe, (75) ha, (76) viyen, (77) teté, (78) se, (79) tak^{w}ana, (80) muve, (81) kicí, (82) taI, (83) nasi, (84) time, (85) huye, (86) hirí, (87) pousara, (88) ruara, (89) tawmoa, (90) k^{w}ayna, (91) šumoa, (92) tika, (93) ——, (94) see, (95) ——, (96)

[12] David Brambila, Gramática Rarámuri, Editorial Buena Prensa, Mexico, 1953. The list was checked against a list collected by K. S. Hilton and made available to me by Stanley S. Newman.

[13] The Varohío list is taken from material collected by Jim Smith (of the Summer Institute of Linguistics) and made available to me by Edward Spicer.

[14] K. Preuss, Worterbuch Deutsch-Cora, IJAL 8.81–102 (1934).

——, (97) šapu, (98) sikirai, (99) waci, (100) mua, antawa.

4.16. MECAYAPAN:[15] (1) neh, (2) teh, (3) tehamen, (4) iniin, (5) inoon, (6) a?kon, (7) tee, (8) ?aya?, (9) inewi, inocin, (10) miak, (11) se, (12) oome, (13) weyi, (14) alimpaciin, (15) weyat, (16) siwat, (17) tagat, (18) kristiano, (19) topo, (20) totot, (21) peloh, (22) atimit, (23) k^{w}awit, (24) -yol, (25) šiwit, (26) nelwayo, (27) -kahlo, (28) este, (29) nakat, (30) ——, (31) oomit, (32) manteka, (33) teksis, (34) -k^{w}ak^{w}a, (35) -k^{w}ita, (36) -cohmiyo, (37) conkal, (38) -contekon, (39) nakas, (40) -iiš, (41) -ya?, (42) -ten, (43) -tan, (44) leng^{w}a, (45) -isti, (46) ikši, (47) -tank^{w}a, (48) -maa, (49) -šit, (50) -keč, (51) -ciciwal, (52) -yol, (53) -yol, (54) -oni, (55) -k^{w}aa, (56) -tank^{w}a, (57) -ita, (58) -kaki, (59) -mati, (60) koč-, (61) miki, (62) mikti, (63) maatopewa, (64) patani, (65) nehnemi, (66) wit, (67) moteka, (68) motali, (69) keca, (70) -maga, (71) -ihli, (72) tonatin, (73) toyeciin, (74) sitalin, (75) aat, (76) kiawat, (77) tet, (78) šahli, (79) tahli, (80) mišti, (81) pokti, (82) tit, (83) nešti, (84) -tati, (85) ihti, (86) tepeyo, (87) čiltik, (88) šošoktik, (89) kostik, (90) istak, (91) pistik, (92) tayowa, (93) totoni, (94) sekti, (95) tento?, (96) nuebo, (97) yektik, (98) redondo, (99) waki, (100) tokat.

4.17. ZACAPOAXTLA:[16] (1) neh, (2) teh, (3) nehwaan, (4) nihiin, (5) nohoon, (6) aakoni, (7) tooni, (8) amo, (9) noci, (10) kači, (11) see, (12) oome, (13) weeyi, (14) nohneel, cikciin, (15) weeyak, (16) siwaat, (17) taakat, (18) taakat, (19) miči, (20) tootoociin, (21) ickwiinti, (22) tekoloot, (23) kwowit, (24) eewat, (25) aašiwit, (26) naalwal, (27) šinaač, (28) esti, (29) nakat, (30) ikwetašio, (31) oomit, (32) čaawak, (33) piotet, (34) ——, (35) kwitapiil, (36) ihwit, (37) -coon, (38) -coontekoon, (39) nakas, (40) iištooloolo, (41) yekacol, (42) teen, (43) taan, (44) nenepiil, (45) -sti, (46) -mec, (47) -taankwaay, (48) -maay, (49) -poš, (50) -keč, (51) -čičiwaal, (52) -yoolo, (53) ——, (54) taayi, (55) takwaa, (56) kikeehcoma, (57) -ita, (58) -kaki, (59) -mati, (60) koči, (61) -miki, (62) -miktiia, (63) ahkwi, (64) pataani, (65) nehnemi, (66) wiica, (67) wectok, (68) taaliia, (69) keca, (70) maka, (71) -iiliia, (72) toonal, (73) mecti, (74) siitalii, (75) aat, (76) weeyiaat, (77) tet, (78) šaal, (79) taal, (80) mišti, (81) pookti, (82) tit, (83) kwowneš, (84) tooneehwii, (85) ohti, (86) tatekilooni, (87) čiičiiltik, (88) šošoktik, (89) kostik, (90) istaak, (91) tiiltik, (92) yowaal, (93) totoktik, (94) seseek, (95) pešoontok, (96) yaangik, (97) kwali, (98) ——, (99) yaayik, (100) -tookay.

4.18. POCHUTLA:[17] (1) nen, (2) muén, (3) tuen, (4) iná, (5) na, (6) ak, (7) te, (8) az, (9) noče, (10) ačók, (11) se, (12) omém, (13) huhióm, (14) túči, (15) ——, (16) glazt, (17) tekét, (18) ——, (19) mičóm, (20) ——, (21) tačóm, (22) atómt, (23) k^{w}agút, (24) ——, (25) šut, (26) ——, (27) ——, (28) ezt, (29) nekét, (30) k^{w}etéšt, (31) ot, (32) ——, (33) titót, (34) ——, (35) ——, (36) ——, (37) con, (38) k^{w}ai, (39) nekéz, (40) -štotolú, (41) yekét, (42) ten, (43) ——, (44) nenepíl, (45) ošt, (46) šói, (47) ——, (48) mai, (49) ——, (50) kokšt, (51) tipén, (52) lyu, (53) ——, (54) temí, (55) k^{w}a, (56) ——, (57) itá, (58) kekí, (59) metí, (60) kočí, (61) mok, (62) mokti, (63) ——, (64) patan-, (65) pašalúz, (66) wíc, (67) teké, (68) mecá, (69) ——, (70) meká, (71) ití, (72) tunél, (73) mezt, (74) ——, (75) at, (76) yekt, (77) tot, (78) ——, (79) tal, (80) pišt, (81) apotókt, (82) tet, (83) nošt, (84) tatí, (85) otkán, (86) ——, (87) ——, (88) šuí, (89) ——, (90)

[15] The list of Mecayapan Nahua is taken from a list collected by H. W. Law (of the Summer Institute of Linguistics) and made available to me by Stanley S. Newman.

[16] Harold and Mary Key, Vocabulario Mejicano de la Sierra de Zacapoaxtla, Puebla, 1953. The following orthographic changes were made: (original) cuV = (is rewritten here as) kwV; VhuV = VwV; qui, que = ki, ke; tz = c; j = h; ch = č; sh = š; *V* = VV.

[17] F. Boas, El Dialecto de Póchutla, Oaxaca, IJAL 1.9–43 (1917).

čupé k, (91) ——, (92) ogwel, (93) tuṇél, (94) suglí, (95) ——, (96) ——, (97) ulík, (98) ——, (99) ——, (100) kul.

4.19. PIPIL:[18] (1) naha, (2) taha, (3) nehemet, (4) ini, (5) ne, (6) taataha, (7) teey, (8) inti, (9) -iši, (10) muuči, (11) see, (12) uume, (13) wewe, (14) čihčin, (15) weyak, (16) siwat, (17) tagat, (18) tagat, (19) mičin, (20) tutut, (21) šeepuu, (22) aatimeet, (23) k^{w}awit, (24) i-yeewa-yuu, (25) iiswat, (26) ——, (27) ——, (28) eesti, (29) naakat, (30) k^{w}eetaaš, (31) uumit, (32) ——, (33) teksiste, (34) ——, (35) ——, (36) ——, (37) sunkal, (38) suntekun, (39) nakas, (40) iiš, (41) yaga, (42) tem, (43) tan, (44) nenepil, (45) -istil, (46) ikši, (47) ——, (48) mey, (49) ihti, (50) keckuyu, (51) čiče, (52) yulu, (53) tapač, (54) aat-i, (55) k^{w}a, (56) -tank^{w}a, (57) -ita, (58) gagi, (59) maati, (60) kuuči, (61) miki, (62) miktiia, (63) ——, (64) pataani, (65) pačalua, (66) wigi, (67) weec, (68) taliia, (69) geeca, (70) maaga, (71) -iilia, (72) tunel, (73) mecti, (74) sital, (75) aat, (76) ——, (77) tet, (78) aašal, (79) ——, (80) mihsti, (81) puukti, (82) tit, (83) neeš, (84) taa-tiia, (85) uhti, (86) teepet, (87) čiltik, (88) šušuik, (89) tultik, (90) istak, (91) pušag^{w}ak, (92) taa-yoweya, (93) tutunik, (94) sesek, (95) ——, (96) ——, (97) yek, (98) ——, (99) waag^{w}i, (100) tuugey.

[18] Walter Lehmann, Zentral-Amerika, Teil I, Band II, 1920. The dialect of Pipil selected here is that of Izalco. Various sources are quoted by Lehmann for this dialect: Ynés Másin, pp. 1044–1059; Lehmann pp. 1032–1036; Karl Scherzer pp. 1027–1028. The following orthographic changes were made: (original) j = (is rewritten here as) h; VhuV, VūV = VwV; V̄ = VV; ch, tš = č; sh = š; kūV = k^{w}V; tz, ts = c.

NOTES AND REVIEWS

LANGUAGE, THOUGHT, & CULTURE. By Roger W. Brown, Irving M. Copi, Don E. Dulaney, William K. Frankena, Paul Henle, Charles L. Stevenson. Edited by Paul Henle. Ann Arbor: The University of Michigan Press [1958]. vi + 273 pp.

YAKOV MALKIEL

Around 1950, American academic agencies (including universities, foundations, and—as a clearing house—the American Council of Learned Societies) sized up the danger of harmfully narrow specialization and resolved to minister a mild corrective, if not a drastic remedy. For that minority of established scholars whose curiosity happened to range beyond their field of technical competence these agencies started offering occasional opportunities to engage, for limited periods of time, in a variety of interdisciplinary researches. Since the informal conference, seminar, or workshop, if kept in unhurried session over an adequate stretch of time, has turned out to be the most effective gathering-point for diversely trained minds, and since language, by virtue of its universal appeal and its distinct functions in different cultural (and, in particular, intellectual) contexts, serves both as a potent magnet and as an ideal point of crystallization for any cross-scientific discussion, it was a fortunate circumstance that two mutually complementary grants from the Rockefeller and the Ford Foundations allowed sixteen scholars representing numerous departmental interests to meet at the University of Michigan during the academic year 1951–52, to work toward an integrated study of language. Nine more scholars (including two whose writings were presumably at the center of much heated debate: Susanne K. Langer and I. A. Richards) were invited to lecture before the group or to engage in a free exchange of opinions with its members. Since Charles L. Stevenson did most of the planning in launching the venture eight years ago, and Paul Henle later acted as the responsible editor in seeing through the press the book under review (a belated outgrowth of the year-long conference), it seems not inappropriate to call this miscellany of articles the Stevenson-Henle Report.

Most of this information has been extracted from the unsigned Preface (v–vi), actually a disappointingly meager prefatory note contributed in all likelihood by the editor. Not a few of the matters uppermost in the mind of the inquisitive reader the Preface altogether fails to mention. What, for instance, was the reason for the unusual gap of six long years between the formal conclusion of the conference and the completion or issuance of the present report? Were any serious efforts made to offset the adverse effects of the delay by bringing the analysis, or at least the bibliography, up to date?[1] What considerations,

[1] A spot-check: Among the books and articles—exclusive of belletristic masterpieces—which Stevenson quotes in the footnotes (271–2) to Chap. 8, two items were published before 1900, one before 1920, one in the 'twenties, seven in the 'thirties, ten in the early and middle 'forties (including 1947); of the merely two later publication dates involved, one is inconclusive, referring to a posthumous collection, a state of affairs which leaves Susanne K. Langer's Feeling and Form (1953) as the only bibliographic entry truly reflecting certain tastes and standards of the last eleven years. If one further takes into account the dimension of frequency, the lag behind the latest trends of thought becomes even more patent: in the given chapter this particular contemporary book is cited only once, while the same author's Philosophy in a New Key (1942) is referred to fifteen times. This ratio is fairly typical of the entire miscellany. Similarly, two papers by the esthetician A. Isenberg characterized as 'somewhat recent' (235) in fact date back to 1944 and 1949, respectively. Of C. Morris's two influential books on semiotic, the earlier (1938) has on the

in the first place, presided over the selection of conferees? Why, in particular, was the quota of professional linguists invited so conspicuously low and the responsibility assigned to these few participants disproportionately modest?[2] Most important of all: Given the similar name, auspices, scope, implications, and starting point of the Conference on the Interrelations of Language and Other Aspects of Culture proposed by R. Redfield, held at Chicago from March 23 to 27, 1953, under the able stewardship of H. Hoijer, and widely noticed as a result of a dramatic report promptly published and generously distributed (Language in Culture; see IJAL 22.77–84), one is truly astonished to discover not even an oblique or passing reference to it and to its impressive reverberations, still less a straightforward appraisal of its results from an ideal vantage point.

An uninvidious comparison between Michigan's Stevenson-Henle Report and Chicago's Hoijer Report and between the conflicting patterns of the underlying conferences is inevitable in retrospect. The fact that the leisurely earlier conference extended over many months, while its counterpart was compressed into a few feverish days predetermined, by and large, the clashing characters of the two reports. Hoijer affords his readers the partially retouched minutes, as it were, of each meeting (unedited text of the major communications, judiciously polished and tightened wording of ensuing discussions): this procedure preserves the stylistic flavor of each formal paper no less than the spontaneity of the unrehearsed queries and repartees. Stevenson and Henle, faced with a bulkier slice of raw material, present the distilled results of their conference, as viewed by an influential minority of participants after a lapse of six years. These results have (or have been) boiled down to nine chapters, actually so many different articles, each written wholly by a single specialist unaccountable to the group except for Chap. 3 (A Stimulus-Response Analysis of Language and Meaning), for which R. W. Brown and D. E. Dulaney, neither of them otherwise represented, have assumed joint responsibility; the remaining four co-authors, endowed with unequal measures of literary skill,[3] have each written two chapters, contiguous or widely separated. One wishes the editors had explicitly stated whether (as is not improbable and, if true, definitely not irrelevant) certain topics relating to language were tackled so unsuccessfully on a tentative basis as to have been excluded from consideration at the crucial stage of book-making. Also, except for a few thinly scattered hints (e.g., on I. A. Richards's casual remark, reportedly made in private conversation: 250), one learns pathetically little about the actual climate and course of the debates, about the adumbrated gradual establishment of points of contact, about the hardening residue—if there developed any—of such ideas on language as proved incommunicable across the barriers of autonomous disciplines.

The topical discrepancy between the two reports is even more pronounced than

whole been drawn upon far more liberally than the later (1946). Aside from stray references to a 1952 book by C. C. Fries (a participant), advanced work in theoretical linguistics, in the perspective of the report, comes practically to a standstill shortly after 1940, with the result that the Sapir Renaissance, currently most visible in the revival of the Sapir-Whorf hypothesis, fails to gain proper recognition as a powerful swing of the pendulum.

[2] Out of 25 only two: H. Hoijer and C. C. Fries (the latter a local faculty member), neither, conceivably through sheer coincidence, entrusted with the writing of even a single chapter. Hoijer's contribution to the conference (a delimitation of ethno- and meta-linguistics) appeared, under the title The Relation of Language to Culture, in A. L. Kroeber's encyclopedic inventory Anthropology Today 554–73 (Chicago, 1953).

[3] As stylists, Copi, Henle, and Stevenson, though their contributions fall short of the ideal of scintillating prose which the essay form seems to demand, prove vastly superior to Frankena. –

the contrast in presentation. The Hoijer Report, from cover to cover, revolved around a single proposition, sharply focused and elegantly formulated, to the effect that the structure of a language may channel the thinking of its speakers into certain predetermined molds. All the lectures (in several instances characteristically titled 'analysis', 'examination', 'search', 'exploration') and the lively exchanges of opinion which they elicited were consistently geared to the elucidation of this central problem. The concluding discussions, too, fitted into this scheme, leading to a highly qualified acceptance, by the majority of the disputants, of a somewhat diluted version of the original hypothesis. No comparably sharp-edged picture of this kind emerges from the Stevenson-Henle Report because, from the start, the reader seeks in vain for a clearly defined unity of purpose and for imaginative guidance on his pilgrimage toward this goal. By dint of paving his own way through the book he gradually discovers certain summits that dominate the landscape at successive junctures: the problem of mutual relations between speech, thought, and culture, an outgrowth of Sapir's gropings traceable, in the last analysis, to some particularly suggestive passages of his book (1921); the stimulus-response analysis of language, a theme bearing resemblance to Bloomfield's behavioral approach, except that the emphasis has here been shifted to meaning; the construction of artificial languages, something of a misnomer, since the chapter is actually concerned with the formulae of symbolic logic tagged as an escape from imprecision and ambiguity; above all, symbolism as defined by the fashionable school of semiotic—an approach to whose fascination Frankena seems to have surrendered completely, while a cautious Stevenson, in applying C. Morris's categories to esthetics, roundly rejects the sign theory for non-representational arts (e.g., music), but shows considerable willingness to go along with it for literature. These summits, I repeat, fail to strike the beholder's eye from afar; what shields them from view is the absence of a vigorously phrased, truly all-embracing introduction designed to show how these various problems, and others, no less attractive, that come up for not quite so thorough discussion (Gestalt psychology [11, .49, 207–8, 211, 258], physiognomy [211–8, 245], new literary and, on a minor scale, musical criticism, study of metaphors) encroach, interlock, and possibly even merge, once certain terminological difficulties have been removed or, at least, smoothed. An equally effective balance-sheet at the end would also have given greater point to both conference and report, transforming an anthology of very loosely—and invisibly—confronted views into a fully coördinated, efficacious tool for cross-scientific communication. Introduction and conclusion should ideally have emanated not from a fellow-specialist, but from an encyclopedically versatile and stylistically adroit mastermind—provided our intellectually split generation has produced one of the requisite caliber.[4]

[4] There are traces of duplication, as when the Sapir-Whorf hypothesis, after providing fuel for a chapter-length debate (1–24), reappears rather incongruously in different contexts (41–2, 114; on language influencing conception and perception see further 61–2, 65), ambiguity in esthetic appraisals is anticipated (69–70), and Havelock's lexical remarks on cosmos are virtually repeated (188–9). Here and elsewhere fairly specific cross-references serve as signposts; yet occasionally one is urged to find supplementary bits of information in a 'previous section' not pinpointed (77, 90), 'later' (175), or 'elsewhere in this volume' (239, 248), the optimistic implication being that the reader will find leisure to peruse the entire omnibus. Stray comments on the editing: all chapters have been subdivided and most (in contrast to the book as a whole) contain a helpful conclusion, but explicit subheadings are often missing, a lack of articulateness aggravated by the absence of any handy Index. While the Hoijer Report concentrated all references at the end of each chapter, all footnotes have here been relegated to a special

As a third point of comparison between the two books, entailing an even sharper contrast, let us examine the representation of the legitimate interests of linguistics within the total spectrum of opinions. In this respect the Chicago Conference offered a panel of real experts chosen from the ranks of practising (and theorizing) linguists, on the strength, it would seem, of their demonstrably wide, 'extracurricular' range of active curiosity (among others, J. H. Greenberg, C. F. Hockett, S. Newman, C. F. Voegelin, all representative of a single dynamic generation). The only major contribution from other quarters was F. Fearing's straight psychological paper, to which a complementary or controlling role was assigned by implication. (In the discussion periods spokesmen for other specialities, notably the philosopher A. Kaplan, were given ample opportunity to intervene.) In Michigan linguists and non-linguists acquitted themselves of their joint task in converse ratio, with psychologists and especially philosophers of various shades (logicians, estheticians, ethicists) setting the tone, imposing the perspective, and attempting to explain facts of language not without intermittent spells of naïveté and with practically no bibliographic background or first-hand experience in fieldwork.

Let me illustrate the point with a brief summary of the first three chapters. In the first, titled like the book, Henle, taking his cue from Sapir and Whorf ('language not only inventories, but actually defines experience'), sets out to examine the relations obtaining between (a) language and thought, and (b) language and culture, a set less rebellious to inspection. (He does not probe those ties, if any exist, that may directly link thought to culture, shortcircuiting the medium of speech, and he tends to shift midway to a tripartite division of the correlatives of language: perception, organization of experience, and broad patterns of behavior or, speaking with M. E. Opler, 'themes'[5].) All told, this is a

appended section (258–73), a cost-saving device currently favored by publishers under the flimsy pretext of increased amenity and readability. Aside from budgetary considerations the argument is a fallacy, doubly so when applied to a motley miscellany: I have caught myself scribbling the key references right between the lines of the pages from which an over-zealous hand must have removed them! There is no dearth of venial misprints in this book—to say nothing of misleadingly sloppy punctuation—(16, 22, 29 [replace 'student' by 'study'?], 39, 41, 43 [careless reproduction of a passage from Bloomfield], 49, 52, 75 [read 'renders' for 'tenders'?], 78 [read 'lever' for 'level'?], 80, 82, 111, 185–6, 190, 193' 232 [read 'affect' for 'effect'?], 235 [read 'relevant, for 'revelant'?], 252; note also the lack of discrimination between 'representative' and 'representational': vii, 196, 226); throughout one finds the predictable quota of mutilated foreign words and names (185, 204, 262 n. 33, 272 n. 35) and instances of inadmissible paragraphing (12), Sapir and Spier are confused (258 n. 2), while the non-academician Whorf is credited with students (186), British and American spelling habits are allowed to intermingle (45–6, 48), and samples of untrimmed colloquialisms ('isn't, can't, doesn't': 53, 69, 210, 220, 256) are left floating amid a highly formal expository prose. Worse, whole lines have been misplaced, to the extent of making important passages downright unintelligible (30, 198, 199, 229.4 [delete 'because of'?], 231 [replace 'of . . . in' by 'with'?]); I suspect an equally harmful distortion in a pivotal mathematical formula (215). A few procedural points remain unexplained (260 n. 31: Was the Michigan Language and Symbolism Group identical with the Conference that gave rise to the Report?), and one stumbles—admittedly, at rare intervals—over undefined technical terms that are less than obvious to the outsider (see n. 13, below).

[5] All appearances to the contrary there is only partial overlapping between this opening chapter and the bulk of the Hoijer Report, repetition being restricted to the quotation of a few celebrated 'metalinguistic' passages from Sapir and Whorf (with special reference to Hopi and to Shawnee); to the long excursus reflecting Hoijer's analysis of some implications of the Navaho verb (21–3), a digression paralleling his article in the quarterly Language and sections of Chap. 6 (92–105) of his own Report; to the—slightly strained—definition of Standard Average European (see below), to the fleeting remarks on Navaho color terms (7), and to the musing on such features of thought content as may be inexpressible or difficult of expression in a

sound chapter; the discussion of the complex relationship between vocabulary, perception, and environment, which may be used as mutual indexes, is competent though in no way sensational (some reference to Benveniste's masterly inquiry [1953] into the socially conditioned 'lexicon of animal life' in Upper Yukon and to A. Alonso's earlier essay on the peculiarly slanted vocabulary of the gauchos might have been helpful); also the more problematic connections are assessed judiciously and with laudable restraint. The analysis culminates in the assumption of bidirectional influences between, on the one hand, the various 'mechanisms of language' and, on the other, thought at its different levels (5, 8, 10, 17) and in a studiedly sober appraisal of Whorf's exciting intuitions. Despite these and other merits the chapter in some respects proves a shade disappointing from a linguist's angle. One may dismiss as trivial certain terminological tangles, such as the replacement of 'syntax' not only by 'sentence formation' (3) and 'sentence structure' (10, 22), but also by such capricious labels as 'building of compounds' and 'word-combination' (20). But what of Henle's failure so much as to mention the sounds as part of the fundamental equipment of each language, a neglect for which even the obvious difficulty of bridging the gaps between the phonemic scaffold, the (indirectly observable) workings of the mind, and the aloofness of the outer world would have been no valid excuse? The assignment of 'terms in different languages, designating the same phenomena, . . . to different word classes', at most an enlightening accident, rates mention alongside such broad categories as morphology and vocabulary (3). A link between perception, conception, and the structure of the lexicon is plausibly hypothesized, but the subsequent analysis of the more controversial impact of morphology on thought—via 'forced observation', with examples drawn from Dorothy D. Lee's studies in Wintu (1936) and from Kluckhohn and Leighton's later research in Navaho—is marred by an utterly unrealistic resolution of an artificially constructed problem (8–9).[6] Is it not time, incidentally, to assay the true value of Whorf's operational unit Standard Average European. here simply taken for granted? One step in the right direction from a skeptic's point of view: given the familiar contrast between English understatement and Romance overstatement (and the corresponding non-verbal attitudes, more easily measurable), why not examine in minute detail how these diverse patterns of demeanor are typically translated into conflicting gestures, basic voice conditions, sounds, words, and constructions?

Chapter 2 (25–48), from the pen of Copi, affords another, somewhat different example of the same inadequacy. It is titled 'The Growth of Concepts', but the author might have sized up its content more accurately by some such label as 'Concrete and Abstract in Language'. Its claim to originality is backed up not by new insights or fresh formulations, but rather by a—not

given language (17–8). All the more noteworthy is the close coincidence between the two consecutive appraisals of the 'language-in-thought-and-culture' hypothesis. Here is the verdict returned by the Michigan Group, in Henle's tempered phrasing: 'Metaphysical thought cannot be entirely linguistically conditioned. ...language is one of the factors influencing perception and the general organization of experience. This influence need not be primary or unique or compelling, but neither is it negligible' (18).

[6] Although economy has its place in the lexical balance (Gilliéron) and in diachronic phonology (Martinet), it merely represents one component in a highly intricate bundle of forces at work in any linguistic shift. Henle's self-assurance in positing the simplification that 'would naturally suggest itself', in declaring that the stem form, being 'easier to pronounce' than any of the suffixed forms, 'would naturally...be used in place of one of them', resulting in 'a convenience in conversation', etc. shows that he underrates the counterforces (conservatism, symmetry or pattern, and the like) blocking or deflecting in most instances the crude dictates of economy.

entirely successful—juxtaposition of results of researches, old and new, in disciplines seldom compared. Starting from the incompatible definitions of 'concept' in modern psychology (= ingredient in any belief or any judgment, hence dependent on a mind or an organism; testable by experiments involving differential responses, e.g., sorting, as a token of pre-verbal intelligence, and, on a higher level, naming) and in traditional as well as modern logic (= a universal which lends itself to use in generally valid propositions; an abstract entity), and passing in review several philosophical systems, from Platonism to its polar opposite, nominalism, Copi devotes most of his attention to the development of concepts in children (31–42), including the acquisition of new concepts through a recall process and the refinement of those earlier formed through successive approximations to the social norm. At this point the terms 'concrete' (in free interchange with 'practical' and 'dynamic') and 'abstract' are introduced, with special reference to children and to schizophrenics, on the basis of Dewey's definition rooted in the demands of practical life (abstract = not associated with practical concerns). The pertinent aspect of child development up to the age of twelve, away from egocentrism, is then broken down, with J. Piaget, into ten cumulative stages, the earlier partaking only of nonverbal (sensori-motor) intelligence, while to the latter a steadily growing dosage of conceptual (= verbal) intelligence has been superadded. Only at the concluding stage does Copi call in professional linguists for rapid consultation. He borrows from Bloomfield a formulaic statement on techniques of language learning (by demonstration, observation, definition) and relies on another chapter in Bloomfield's book—one of the least original—for guidance in the study of semantic change (42–4). When Copi speaks of the 'best' or the 'well-developed' language (43–4), he treads on thornier ground than he suspects. The chapter ends, surprisingly, with a summary of four lectures by E. A. Havelock on the 'semantic change in the direction of greater abstractness in the Greek vocabulary from the time of Homer to the Periclean Age' (45–7), a postscript phrased in patently different terms than the preceding sections (individual preferences of schools of thought) and left neither assimilated to the strictly societal view of language, nor neatly contrasted with it. But what, apart from this lapsus, is particularly regrettable is Copi's neglect of Sapir's long and painful struggle with the varying role of concreteness in languages (a role which he used as a classificatory criterion in his book, virtually abandoning the idea in his subsequent encyclopedia article). The chapter might further have been immensely enriched by references to relevant European studies, e.g., to the linguistic analysis of abstractness by V. Brøndal (applied to modern French) and by C. Bally (opposing French synchronically to German), or, for that matter, by mention of the historically slanted inquiries into the marked concreteness of Vulgar Latin paralleling the collapse of Graeco-Roman intellectual standards.

Approximately the same ratio between linguistic and non-linguistic information prevails in Brown and Dulaney's, on the whole, serious and meticulously planned contribution (Chap. 3: 'A Stimulus-Response Analysis of Language and Meaning' [49–95]). It is no secret that Bloomfield's almost poignant unconcern with meaning, permeating his influential book and traceable to articles and critiques written since the mid-'twenties, was at least partially suggested by an early, radical version of behavioral theory no longer adhered to, at least not in its unmitigated crudeness, by many if not most younger experimental psychologists.[7] Linguists further recall that

[7] M. Schlauch emphasized this point as early as in the mid-'forties in two memorable, though not unbiased, articles which must have escaped the authors' attention. The better known appeared in

hardly any other component of Bloomfield's close-knit doctrine provoked such sweeping enthusiasm among his most orthodox followers as this gingerly dodging of signification; indeed, some foreign observers go so far as to view this token of scrupulousness as the principal line of cleavage between American and European majority views of linguistics (among others E. M. Uhlenbeck and A. W. de Groot, Lingua 7.91–2 [1957]). Be that as it may, a fresh attempt at a rapprochement between the empirical linguist's and the psychological experimenter's semi-independent views of meaning was certainly in order. Yet here again the familiar pattern of lopsidedness emerges, because the two approaches are differently weighted. On the linguistic side the authors' horizon is essentially bounded by the minimal characterization of stimulus-response in Chap. 2 of Bloomfield's manual, to which, aside from this helpful dichotomy, they also owe a stress on the communicative aspect of speech (they refuse to deny the existence of other legitimate aspects). From incidental remarks and digressions one infers a measure of familiarity with the principle of arbitrariness of the linguistic sign (this principle they seize upon to disconnect an infant's acquisition of linguistic skill from 'insightful learning' as postulated by the Wertheimer-Koehler School: 49), with codes and communication engineering (49, 51), with communication theory (65: note the comment on 'consummatory' messages, of major concern to the student of expressivism), with elaborate, yet not speech-like, communication among animals (85; here A. Kroeber's recent mise au point might have been appositely quoted), with distinctive features (86–7; yet the Prague School and its affiliates do not rate mention), with allophones (a term launched in 1942: 65–7), also, understandably, with Fries's structural, as against personal (or socio-cultural), meanings (71, 88) and Pike's intonational symbols (74). Even the sect of reforming semanticists is briefly alluded to (75). But this is merely the glittering surface; the core of the semantic problem, as some linguists visualize it, is nowhere firmly grasped. Neither Harris's extreme evasion of reference to meaning and its replacement by discourse analysis, nor the spectrum of predominantly unfriendly reactions to this display of intransigence (for a synopsis see Rom. Phil. 9.39–40) come up for mention; though lexicon and syntax are identified (86–9), the authors do not broach the problem, lately brought to the fore, of tentative substitution of intonational for syntactic analysis;[8] one finds no reference to S. Ullmann's conciliatory attitude in matters semantic. On the other hand the chapter affords a richly nuanced account of competing psychological approaches, with Gestalt psychology, as in the remainder of the book, occupying a titillatingly inconspicuous place in the background (50, 61, 90: Hull's configurational conditioning). As the axis of their discussion the authors introduce, from the start (51–5), a distinction between, on the one hand, (Pavlov's) classical conditioning, in which the reinforcement of a conditioned response is the stimulus that produced the earlier (unconditioned) response, and, on the other, the more recently defined instru-

Word 2.25–36 (1946) and leaned heavily on Charles L. Hull, as does Chap. 3 of the book under review. Our authors' position is best summarized by this lapidary statement: 'As stimulus-response theories of the sign-function grow sophisticated and more adequate to human language [than those dealing with elementary animal situations], their behaviorism fades into the promise of a program, and the statements of the theory lose vulnerability' (79). Noteworthy is the determined rejection of Watson's famous implicit responses (slight muscle movements and subvocal speech) as reflecting a peripheralist view, i.e., confusing 'unreliable peripheral accompaniments' with 'central meaning processes' (80).

[8] Syntax is allowed throughout to usurp some of the functions of morphology (though the authors operate with free and bound morphemes: 87), and the compounding of words into sentences is misrepresented, I believe (58–9).

mental learning, in which the reinforcement acts as a consequence of the conditioned response (reward, escape, avoidance training). Behavioral responses are pictured in this context as lending themselves to selection much like genetic mutations (the authors strictly rule out teleology). After some meandering the analysis, cued to this pervasive distinction, culminates in the following two-pronged conclusion (94–5): speech production is more like an instrumental act, a means of environmental control (cf. 57), shaped by gradual differentiation of responses through social selection (60), and reinforced by an imitative tendency—definitely not an instinct (63). Conversely, sign function or meaning is more like a classically conditioned response, implicit (i.e., mediating, as against overt) and involving by definition (52) only a fractional component of the unconditioned response. To veer away from psychological jargon to Morris's semiotic, one may at this point simply substitute 'dispositional attachment' for 'fractional component' and 'denotatum' (typically an object forming part of the outside world) for 'unconditioned response' (76–7).[9] Fortunately our authors at intervals resist the lure of the Morris doctrine, slightly modifying his characterization of natural languages (85–6) and hesitating to identify meaning with overt behavior through the so-called habit-family hierarchy (79); they even strike an agnostic note by declaring: 'Meaning has been pushed to a place in the organism where it eludes the most sensitive instruments now available' (83). Brown and Dulaney are candid enough to grant at once that their conclusion leaves unexplained significant innovations and variations (they anticipate some of these shortcomings 62–72, trying rather clumsily to extricate themselves from their predicament, mostly through appeal to secondary reinforcement). But they seem not to suspect that far more serious objections than those posed by the innocuous production of novel (lexical) combinations (71–2) are raised by such full-scale innovations as affect a virtually closed system of sounds or forms. A firm grasp of the linguistic drift, as splendidly sketched by Sapir (1921), and of the internal economy (sound shifts arranged as chain reactions), as presented most vividly by diachronic phonologists, might have helped them to reappraise the issue and to escape an embarrassing impasse in their lame comment on the social sanctioning of allophones (67).

Yet another symptomatic comparison may be drawn between the Michigan and the Chicago Reports. It concerns the attention each devotes to the artistic use of speech, with special stress on the written word (fine literature). On this score, the Michigan Report, by virtue of its rather diffused focus, accomplishes distinctly more than its counterpart, doing justice in the process to the catchword Culture not only as the term is currently understood by social scientists (historically conditioned communal organization, as against biological heritage), but also as it is interpreted by humanists and laymen (balanced acquisition of non-technical knowledge; refinement of taste, alertness, range of curiosity, and acumen). Henle need not have been apologetic about the relative dearth of originality informing his compact, didactically slanted study (173–95) of the metaphor (Chap. 7),[10] a splendid piece of what French scholarship prizes as 'haute vulgarisation', with ample allowance made for graded steepness, repetition (173,

[9] 'A stimulus, then, is a sign of an object if it produces a disposition to respond under certain conditions with response sequences that are also cued for the object'. C. E. Osgood, building on Hull's learning theory, similarly argues that when stimuli [including linguistic signs] previously associated with the stimulus object [e.g., a denotatum] 'are later presented without its support, they tend to elicit some reduced portion of the total behavior elicited by the stimulus object' (81).

[10] Sporadically Henle refers to metaphors also in the introductory chapter (8, 11, 15, 17). See also 98.

175), and alternative restatement (178). If he could not help paraphrasing at length some Aristotelian definitions of tropes, he at least pointed out a vast stretch of uncharted territory (189) and provided a redeeming touch of modernity by his astute remarks on the social subsoil of figurative speech (185–6) and on certain limits to the effective paraphrase of a metaphor (175–6, 193–5). The very practicability of such necessarily cumbersome circumlocutions has been lately at issue among literary critics; it was championed by Ruth Herschberger (with frank admission of temporary obstacles[11]), categorically ruled out by C. Brooks, and partially conceded by I. A. Richards. Our temporizing reporter rates the venture as feasible in principle, but at the cost of heavy sacrifice (curtailment of effect, through loss of interaction of similarities) and preferably if applied to fading or extinct metaphors[12] rather than to those—particularly potent—that are in their nascent stage. While paying tribute to the fashionable symbolist theory by labeling a word an immediate sign of its literal, and a mediate sign of its figurative, sense (175–6), Henle is discreet enough to invoke, for a change, C. S. Peirce's rather than Morris's formulations. With their aid he contends that a symbolic strain (arbitrary signs, such as ordinary words) and an iconic strain (signs endowed with actual similarity of quality [color, shape] or structure, such as onomatopoeic words) have been interwoven in each metaphor, with particular subtlety so in artful poetic discourse. In this privileged precinct the aptness of a metaphor may depend on the writer's skill in elaborating it (177–81) and on deliberate interplay with puns, i.e. homonymy, which may materially increase the total impact (183–4); antecedent and induced similarity, we are led to believe, countenance each other and may jointly receive support from supervenient induced content, emotional or conceptual (191–2). The differential feature setting apart neatly patterned metaphors from the mass of amorphous 'metaphoric statements' is that 'in a metaphor some terms symbolize the icon and others symbolize what is iconized . . . some terms refer literally to one situation and figuratively to the second while other terms refer literally only and refer to the second situation only'. In contrast to this characteristically explosive alloy, simile—'a mere invitation to metaphoric thought'—lacks terms endowed with figurative senses, both sides of the equation being overtly stated, while allegory, in turn, may be interpreted in its entirety strictly on the literal level and yet conceal an optionally inferable deeper meaning. (Henle seems unaware of 'figuralism' to which the late E. Auerbach strove to grant an independent status, at least in some cultures, alongside symbolism and allegory.)

The prime condition for the success of a multi-faceted symposium is that all participants agree to renounce the prerogative of each using his professional jargon and that, at the publishing stage, the editor-in-chief firmly induce contributors to define in plain words and to exemplify graphically those few technical terms admitted after careful screening. This policy has been quite laxly enforced here, with the result that the level of specialization is fairly uneven. Some chapters read easily, not unlike retouched lecture notes or extended articles in a first-class encyclopedia, whose authors have been cautioned to aim at the sophisticated general reader without giving the appearance of talking down to him. Others the outsider can hardly expect to assimilate down to minute details without

[11] It might have been worth while to refer to J. S. Ransom's editorial rebuttal of her esthetic near-positivism, published in the same number of Kenyon Review.

[12] Henle expounds brilliantly the tendential literalization of metaphors (187–8), but should not have perfunctorily equated 'idioms' with 'dead metaphors' (183). Numerous idioms are best identified by their grammatical opaqueness or aberrance rather than in symbolistic terms.

some previous exposure to, or even training in, the given discipline. Unfortunately the worst offenders against this principle of ready intelligibility (not unaware of their own peccadillo: 83) are Brown and Dulaney whose ambitious contribution, if properly pruned of obscurities, might have been the most enlightening of all to the student of linguistics. But if reinforcement and extinction, as understood by present-day psychologists, are adequately explained (52), it is difficult to select a page not marred by some uncomfortably cryptic term.[13] True, part of the confusion stems from terminological disagreements within the ranks of the chosen profession: What Hilgard and Marquis (to whose canon our authors in general adhere) called instrumental learning (1940) had previously been known, one discovers, to B. F. Skinner's readers (1938) as operant learning and at a still earlier stage—and in more rudimentary form—as trial-and-error learning (57, 260). Such frills and niceties of nomenclature should resolutely have been trimmed away in a book of this scope. If they happen not to obfuscate in equal profusion any statements on linguistics proper (a discipline, as we realize only too well, which suffers from the same acute ailment), then this apparent advantage is due mainly to the pitiful scarcity here of straight linguistic discussions.[14]

To sum up: the Stevenson-Henle Report is an eclectic miscellany assembling contributions of uneven intrinsic merit, different degrees of readability, and widely varying measures of direct relevancy to the linguist. In a way, its title is a misnomer, since, if a topical kernel is at all discernible, this core could be most appropriately tagged 'Symbolic Aspects of Language'. Thought, at intervals, looms large in the discussions, via symbolic logic and semiotic, with a few allusions to mathematics, while the approach to Culture is not devoid of ambiguity, hovering as it does between the anthropologist's and the esthetician's almost irreconcilable viewpoints. If the linguist is unlikely to benefit directly from this panel discussion, his indirect profit may be sizable provided his own mind is sufficiently elastic.

[13] Such as expressive vs. receptive aphasia, skeletal response, reduction of tissue needs, steep auditory gradients, phylogenetic advances, effectors controlled by the autonomic nervous system, a common quale, perfectly redintegrative conditioned responses, Titchener's 'images' (tagged as capricious), 'Und-Verbindungen' purportedly congenial to associationism, and afferent neural impulses, to none of which one finds a clue between the covers of the book.

[14] Limitation of space does not allow us an equally detailed examination of the remaining chapters. Stevenson's forcefully phrased account (Chaps. 8–9) of symbolism in the arts (196–257) would lead us far afield, while Frankena's semiotic contribution (Chaps. 5–6; pp. 121–72) is so unenjoyably written—starting with a chapter heading as disappointingly vague as 'Some Aspects of Language'—as to provoke contradiction at every step. But a few words are in order on Copi's beautifully constructed Chap. 4 on 'Artificial Languages', a boon to the layman (96–120). The author is concerned here neither with semiartificial languages like Esperanto (on these see 93), nor with scientific abbreviations and ordinary formulas, introduced on account of their precision, brevity, and freedom from connotations ('supplemented natural language'), but with formalized symbolic languages, a near-synonym of 'logistic systems' (264 n. 9), as constructed by logicians and mathematicians in an effort to elude the 'fallacy of verbalism' (Russell). The former are guided by their desire to set up purely syntactical transformation rules fitted to test the validity of propositions, the latter lean in the direction of formal deductive systems whose primitive terms are arbitrary, uninterpreted symbols, not defined until after all theorems have been derived and thus achieving greater generality, the whole based on a deductive system having deduction itself as its subject matter. Wittgenstein's program of investigating reality by means of an ideal language is rejected on account of its circularity (110), and claims staked out by phenomenalists and materialists as to the more convincing presentability, hence truthfulness, of their respective systems are brushed aside. Important for linguists is the conceivable application of symbolic languages—as idealized models—to the study of natural languages (A. Church), in spite or even on account of salient differences (118–9), and especially the criticism (115–6) of the axiomatic method in linguistics (Bloomfield, Bloch) as being premature.

He has a chance to hear about current progress in some palpably close domains and to discover what (possibly warped) impressions the researches of his own associates have produced in influential and not unsympathetic quarters. He may feel an urge to muse on the channels that allow some results of stringent laboratory work to filter through or spill over into the vast reservoir of our general mid-twentieth-century culture, while barring others from this rewarding access to readers at large. The three chief weaknesses of the book, paradoxically enough, also constitute its three principal assets. First, the failure, for one reason or other, of the most frequently quoted contemporary authorities (Black, Brooks, Carnap, Church, DeLaguna, Empson, Hull, Morris, Pepper, Piaget, Russell, Skinner, to cite but a few recurrent names) to have participated in the Conference, still less in the drafting of the Report, has tended to blunt the sharp edges: instead of flamboyant manifestoes and exciting challenges, one finds throughout soberly worded, soothing balance sheets. Second, the consistent disregard of the diachronic axis (a trend only pointed up by Havelock's ill-timed Hellenic interlude) spells out the generally prevailing ahistoricism, allied, as if by compensation, with structuralism—as powerful a league as was, in the past century, an initially nostalgic historicism buttressed after Darwin by evolutionism. Third, the essential limitation (without defiant overtones) of the Report's horizon to the Anglo-American scene, despite desultory mention of Bergson and Croce (but definitely including a few privileged nuggets of continental European culture long ago absorbed, e.g. Carnap's logistics), marks a climate of intellectual self-sufficiency characteristic, for better or for worse, of an influential sector of latter-day American academic life.

Two afterthoughts. The Michigan Conference and its belated brain child seem two links in a lengthening chain of symptoms pointing in the direction of a still inarticulate restlessness that began breaking into the open shortly after 1950. To be sure, formal descriptive analysis has by now been carried to a high degree of perfection, but the days when this respectable accomplishment produced unalloyed satisfaction seem to be speedily drawing to their close. The jubilance is tempered by the realization that, if current trends remain unchecked, linguistic analysis may become an isolate among intellectual pursuits; that very attractive possibilities of overlapping inquiries into culture and language may have been severely reduced; that the future growth of historical linguistics, irrevocably moored to exegetic disciplines of which philology is by far the most nourishing, may be altogether stunted once an uncompromising shade of empiricism becomes the law of the land; that the province of language study, if of late widened and deepened in some directions (stress on exotic tongues, hierarchization of features on certain levels), has been critically narrowed in others that invite less precise, but not less significant nor less patient, operations—many of them highly valued by society at large (etymology, semantics, border-zone of stylistics, metrics, folklore, ethnology). The second, not unrelated afterthought concerns Sapir in whose work—aside from the corpus of Indianistic monographs—a somewhat diffident avant-garde twenty years ago almost apologetically recognized above all a mastery of verbal craftsmanship, an appeal to subtleties not readily verifiable, a uniquely imaginative line of inquiry recalcitrant to capsulation. Actually Sapir reached the pinnacle of his inner growth when he envisaged, in the perspectives of arrangement and of history, the challenging interplay of diverse forces which lend themselves to analyses of different degrees of stringency. His work at its most personal is connotative of exactness, but not one enforced at the expense of completeness and complexity; it is incompatible with simplification riding rough-shod over the more elusive, less

mechanically classifiable, less welcome facts. The dramatic re-discovery of Sapir which, one ventures to predict, has just begun to gather momentum, marks a return not to such surface phenomena as mentalism, conjectural psychology, poetization of knowledge, but to a fuller, less schematic grasp of the facts of language in all its dimensions and layers, nuclear and peripheral alike, embedded in the broader facts of culture. The Michigan Report shows a group of psychologists and philosophers reaching out for Sapir's hand; the Chicago Report portrayed several anthropologists and linguistic analysts similarly engaged. Before long, a new generation of language historians will discover the treasure trove of basic truths about dynamics that has far too long lain entombed in Sapir's most enduring writings.

UNIVERSITY OF CALIFORNIA, BERKELEY

THE ORIGINS AND PREHISTORY OF LANGUAGE. By G. Révész. Translated from the German by J. Butler. New York: Philosophical Library, 1956. Pp. viii + 240.

ALO RAUN

The book is subdivided as follows: Preface, p. v–vi; I. Introduction, p. 1–4; II. The Problem of Origins, p. 5–16; III. Theories of Origins, p. 17–87; IV. The Problem of an Original Language, p. 88–90; V. The Language of Early Man, p. 91–93; VI. The Theory of the Linguistic Functions, p. 94–131; VII. Human and Animal Forms of Contact, p. 132–148; VIII. The Development of Phonetic Forms of Communication, p. 149–193; IX. The Importance of the Contact Theory of Evolution, p. 194–198; X. The Logical Structure of the Contact Theory, p. 199–206; XI. The Significance of the Contact Theory for Linguistic History, Psychology and Prehistory, p. 207–215; XII. Summary, p. 216–226; Bibliography, p. 227–230; Some Writings of the Author, p. 231–233; Index, p. 235–240.

In the book under review, reference is taken to the well-known fact that the Linguistic Society of Paris, founded in 1866, declared inadmissible in its statutes any note of communication on the origin of language. Obviously this prohibition was prompted by the numerous and fruitless discussions of the problem. When reading Révész' accounts of those earlier theories, one cannot help but understand such an attitude. Still it is necessary to take one further step, and to state that Révész' own contribution, which he calls "contact theory," falls short of its goal in spite of the author's admirable knowledge and most respectable effort. Since we are so far away from any kind of origin, it is impossible to give even a fair reconstruction of the situation in which language might have originated. As a principle, Révész acknowledges this, but instead of stopping here he goes on with his contact theory. Logically, any such argumentation must contain a considerable amount of circularity, since certain other developments of man would be required for the rise of language, and vice versa. Much depends on what we understand by language and the origin of language. For this reviewer, language means two-way communication, and the origin of language was the moment when the first spoken response was given to a message. Excluded from this interpretation are all unspoken languages and all monologues in a spoken language. It is, of course, all right to try to list conditions which might have contributed to the rise of language, but such a list could probably never be made complete, and the original order and relative importance of the factors involved could hardly ever be established.

To these general remarks a discussion of various details might be added, but such hardly seems profitable after the many reviews of both the German and English editions of this work. No reference is made in the preface of the English edition to the reviews of the German edition; obviously the author did not profit much by them.

Also, he has been unable to follow up any newer linguistic developments either in Europe or in America. Nevertheless, the book can serve as a useful guide and warning for those who are looking for a solution to the problem indicated by the title.

INDIANA UNIVERSITY

HOMOPHONY OR POLYSEMY?

DOUGLAS TAYLOR

Among other semantic "analogies" between Arawakan, Cariban and Tupian languages cited by C. H. de Goeje (in his *Études linguistiques caribes II*, p. 46), we find the following (the numerals refer to entries in his comparative Cariban vocabulary in the same volume): 'Le mot arawak (h)adali *soleil* contient le radical (h)ada *chaud*, mais il semble que le même radical fait part du mot adahaka *uriner*. Parallèlement à cela les mots 400 šiši *soleil*, 1619 aši-p-hak *chaud* et 29 ešiku *urine* contiennent probablement le même radical.' This note concerns only the Arawakan forms.

Lokono (h)adali *sun* seems to have no cognate equivalent in any other Arawakan language; but is plausibly explained as derived from (h)ada *hot* (cf. Island Carib h-ára *hot*) by means of the nominalizing suffix -li *male human*—the sun reputedly having been a man. Similarly, Lokono uadili *man* (another innovation) is most probably derived from uadi- *long*. But Lokono adahaka *urinate* (cf. Breton's Island-Carib árga *pisser*, narágoyem *je pisse*) seems hardly more likely to contain (h)ada *hot* than (h)ada *tree or stick or wood* (cf. Island-Carib ar(a)- with the same meaning, but attested only in bound form, and ata, ada, aha, etc., its equivalents in many Arawakan languages, some free, others only in composition), which de Goeje does not mention in this connexion.

Since it is clear from other considerations that Breton's 'g' and 'c' or 'k' represent sounds that were non-distinctive in the dialect described by him, I should be inclined, on the basis of Island Carib alone, to regard his ár(a)ga *urinate* as identical with the first word (a verb) of his áraca racá-bae *vide ton verre*; and to regard this verb as unrelated to the particle hára *hot*. However comparison with Lokono suggests that Breton's áraca is related to Lokono (h)ara *to be spent, ended, accomplished* and to araga *to cut off* rather than to adahaka *urinate*. So that if the /d/—/r/ opposition of Lokono is inherited and the Island-Carib merger in /r/ an innovation, as comparison with other Arawakan languages indicates, then we must still regard the original identity of the homophonous morphemes in the words meaning *hot, urinate* and *tree or stick or wood* as a possibility worth investigating.

To assume that the same form designated both *heat* (or *hot*) and *wood* might not be too far-fetched (for these Indians used sticks of wood not only for fuel, but also, in pre-Columbian times, for generating fire by drilling); but it would not render the suggested relationship to the word meaning *urinate* any more plausible. On the other hand, if we take the central meaning of Lokono ada to be *put forth* or *emit*, not only does the semantic connexion between the different referents mentioned so far (*hot or heat, urinate* and *tree or stick or wood*) become clear, but we are then enabled to recognize this form (whether simple or complex I shall not venture to say; but cf. Lokono uda, Island Carib úra- *skin or bark or other outer covering*) in a number of otherwise intractable words. For example, Lokono adakota *ask* = *inquire of or require of* may plausibly be analysed as: ada + causative -kota = *cause to give out* (*information, etc.*), in the same way as transitive andakota *join* = *cause to come together* is derived from intransitive anda *meet* = *come together*, or abokota *catch or take or hold*, but more literally *cause to be in with* (*the one who performs the action*), is derived from abo *with or in*, etc. The fact that Island Carib has several unrelated forms which—though not equivalent—are equally trans-

latable by English *hot* or *heat* (according to affixation), and that hára *hot* or lára *its heat* seemingly applies only to that kind which may be qualified as 'radiant' tends to support this interpretation. If it should be correct, Lokono ada and its cognates have many referents but only one meaning; and the only problem here, as in many other cases, is one of translation.

DOMINICA, BRITISH WEST INDIES

ON TONE IN CROW*

G. H. MATTHEWS

The prosodic features in Crow present an interesting example of the non-uniqueness of phonemic solutions, and thus far two solutions have been presented. Kaschube (IJAL 20.34–6, 1954) sets up a distinction between long and short vowels, a single stress-accent (i.e., a two-valued feature one value of which is applied to every vowel), and three tonemes (i.e., a three-valued feature—HIGH, LOW, and FALLING—one value of which is assigned to every vowel). She then cites certain restrictions in the occurrence of vowel length, stress, and tones: FALLING occurs only on long vowels; and in her examples, but not in longer forms, stress occurs only and always with HIGH and FALLING tones.

The other solution, proposed by Hamp (IJAL 24.321–2, 1958), is based solely on, and is a rephonemicization of the examples in the Kaschube paper. His solution is to set up just one tone-accent (i.e., a two-valued feature one value of which is assigned to all vowels), and to phonemicize the long vowels as geminates. He ignores the stress-accent (because of his limited corpus this is all he can do). FALLING, then, is phonemicized by placing the tone-accent on the first of the geminate vowels, and HIGH by placing it on the second. The short HIGH vowels, of course, are marked with the accent, and all LOW ("simply no tone at all") vowels are unmarked.

Another solution is presented here which makes use of the syntactic structure of Crow. Wherever in the examples a long LOW vowel follows a syllable with a HIGH vowel (t'íšpa·šo = *your feather* and t'íškya·ra = *your mother-in-law*) the HIGH and the LOW are separated by the alienable possession morpheme, *š*. We shall spell this morpheme *ša* and separate it from the following noun stem by a boundary, =, introduced by syntactic processes (thus the forms cited above will be tíša=pa·šo and tíša=ka·ra). This boundary is also introduced between the constituents of compounds: Thus, the form given as č'é·tpaca = *Japanese* is actually čé·ta=paca· from čé·ta = *wolf* and paca· = (*a woman's*) *brothers* and the form ašštà·rra = *tepee* is actually ašši=ta·rra from ašší = *tent* and ta·rra = *conical*. Then, with a phonemic notation that contains a single tone distinction—HIGH vs. LOW—and a single vowel length distinction—long vs. short—the following set of rules, if applied in the indicated order, will produce the correct placing of tones in all of the forms.

1. If a long LOW vowel immediately follows a syllable with a HIGH vowel, and without a = boundary separating them, the long vowel becomes FALLING. By this rule čičáxa· → čičáxà·, ſ·sa·kša → ſ·sà·kša, má·pá=táčča· → má·pá=táččà·.

2. A sequence of a short vowel plus a = boundary is lost. By this rule ašší=ta·rra → aššta·rra, čé·ta=pača· → čé·tpača·, tíša=pača· → tíšpača·, tíša=ka·ra → tíška·ra, má·pá=táččà· → má·ptáččà·, maša=pa·šo → mašpa·šo, tíša=pa·šo → tíšpa·šo, pirá=ičká → piričká, maša=pira· → mašpira·, tíša=pira· → tíšpira·. (A later rule would soften the *k* after *š*, *č*, and *i*.)

3. In forms without a HIGH vowel, the first long vowel becomes FALLING. By this rule aššta·rra → ašštà·rra, mašpa·so →

* This work was supported in part by the U. S. Army (Signal Corps), the U. S. Air Force (Office of Scientific Research, Air Research and Development Command), and the U. S. Navy (Office of Naval Research); and in part by the National Science Foundation.

mašpà·šo, pira· → pirà·, mašpira· → mašpirà·, pira·kša → pirà·kša, u·wata → u·wata. By adding another rule, we can also explain the final vowels in such forms as mašpir'à· (maša=pira·) = *my fire* and t'íšpira (tíša=pira·) = *your fire.*

4. A final long LOW vowel in a form containing a HIGH vowel becomes short. By this rule čé·tpača· → čé·tpača, tíšpača· → tíšpača, tíšpira· → tíšpira. And another rule will explain the tones of the various forms of paššík.

5. A sequence of HIGH-LOW-HIGH becomes HIGH-HIGH-HIGH. By this rule pí·hurá → pí·húrá, pí·paššík → pí·páššík, tí·paššík → tí·páššík.

It should be noted that the order of application of rules 3., 4., and 5. is not fixed. However, rule 1, must be applied before rule 2. Otherwise, tíša=pa·šo would come out as *tíšpà·šo, an incorrect form. Rule 2. must be applied before rule 3. Otherwise, aššíi=ta·rra would come out as *aššta·rra, an incorrect form. Similarly, although the examples do not show this, rule 2. must also precede rule 4. Otherwise a form such as aššíi=pira· would come out as *aššpira instead of the correct form aššpirà·. Thus the interpretation of the phonemic notation is provided by a set of ordered rules, and each rule is applied to the results of the preceding rule.

RESEARCH LABORATORY OF ELECTRONICS
MASSACHUSETTS INSTITUTE OF TECHNOLOGY

ADDITIONS TO CATHERINE A. CALLAGHAN'S CALIFORNIA PENUTIAN: HISTORY AND BIBLIOGRAPHY (IJAL 24, 189–194. 1958)

TOR ULVING

I do not know whether this bibliography was intended to be complete, but a look into my bibliographical files revealed that a number of items could be added, some of which follow.

Dixon, Roland B. 1910 Pujunan family. BAE 30: 2.326–327.

Driver, H. E. 1937 Culture element distributions VI: Southern Sierra Nevada. Anthropological Records (AR) 1: 2.53–154 (pp. 146–153: Comparative vocabularies).

Francescato, G. 1952 A structural comparison of the California Penutian, MA dissertation Indiana Univ.

Gatschet, Albert S. 1879 Classification into seven linguistic stocks of Western Indian dialects. RUSGS 7.403–485.

Harris, Zellig S. 1944 Yokuts structure and Newman's grammar. IJAL 10.196–211; 1947 Structural restatements. I. IJAL 13.47–58 (Yokuts).

Heizer, Robert F. (ed.) 1952 California Indian linguistic records: The Mission Indian vocabularies of Alphonse Pinart. AR 15: 1; 1955 California Indian linguistic records: The Mission Indian vocabularies of H. W. Henshaw. AR 15: 2.

Hymes, D. H. 1957 Some Penutian elements and the Penutian hypothesis. SJA 13.69–87.

Kroeber, Alfred L. 1906 Yokuts names. JAFL 19.142–143; 1929 The Valley Nisenan. UCPAAE 24.253–290.

Lee, D. D. 1942 Noun categories in Wintu. KZ 67.197–210; 1943 The linguistic aspect of Wintu' acculturation. AA 45. 435–440; 1944 Categories of the generic and particular in Wintu'. AA 46.362–369; 1944 Linguistic reflection of Wintu' thought. IJAL 10.181–187; 1946 Stylistic use of negative in Wintu'. IJAL 12.79–81.

Lohmann, J. 1943 Einige Bemerkungen zu den Genus-Kategorien des Wintu. KZ 68.99–121.

Newman, Stanley S. 1932 The Yawelmani dialect of Yokuts. IJAL 7.85–89.

Preston, W. D. 1950 Maidu macrophonemes. IJAL 16.185–192.

Sapir, E., and Morris Swadesh. 1953 Coos-Takelma-Penutian comparisons. IJAL 19.132–137.

Swadesh, Morris. 1954 On the Penutian vocabulary survey. IJAL 20.123–133.

Uldall, H. J. 1954 Maidu phonetics. IJAL 20.8–16.

GOTHENBURG, SWEDEN

Errata in Island Carib IV,

by Douglas Taylor, IJAL

24.36–60.

(Page) 37 (column) II (line) 34: uéiu (not: uéie); 41.I.40–1: express (not: press); 43.I.26: ibídię (not: abídię); 43.I.45: úraga (not: urága); 43.II.2: ibídię (not: ibíbię); 46.II.19: leréga (not: lergéga); 46.II.1: lagábu (not: lagágu); 47.I.30: táru (not: tátu); 47.I.41: *when she* (not: *what she*); 48.I.17: abúhaį (not: abúnhaį); 48.II.2: adarásarubádina (not: adarásarubá-dina); 49.I.2: agą́ieha (not: agą́eiha); 49.I.4, delete full-stop after: lámuią; 49.II.4: gą́iahadíbu (not: gą́iahadibu); 51.I.5, delete redundant: uéiu abą; 51.I.17: hanóga (not: hanóa); 51.I.17: lagóto (not: labóto); 51.I.30: sóti (not: sóto); 51.II.45: larúga-ti (not: larúgua-ti); 52.II.9: tų (not: lų); 57.I.24: Dip up (not: Dip us); 57.II.34: the car (not: their car); 57.II.38: They came (not: Bird came); 58.I.45: world (not: word); 59.I.11: mútu (not: métu); 59.I.30: lagóto (not: lagóti); 59.II.9: humái (not: humiá); 59.II.30: uéiu (not: néiu).

Preliminary Announcement

SUMMER SCHOOL OF LINGUISTICS

July 6th–August 14th, 1959

University of Alberta,

Edmonton, Alberta, Canada.

Encouraged by the good enrolment in the 1958 Summer School of Linguistics and by a growing interest in linguistic studies in Canada, the University of Alberta in co-operation with the Canadian Linguistic Association will conduct a second Summer School of Linguistics during the summer of 1959. A considerably expanded program of courses, all of which carry University credit, will be offered:

General Linguistics
Phonetics and Phonemics
Morphology and Syntax
English Phonetics
French Phonetics
Linguistic Geography and Lexicography
Semantics and Translation Theory and Practice
History of the English Language
Modern English Grammar
Teaching English as a Second Language
Comparative Classical Philology
Introduction to Slavonic Linguistics

Depending on the demand, it is expected that a course in Cree *or* in Eskimo will also be available.

Prospective Canadian participants are eligible to apply for financial assistance to the Canada Council, 140 Wellington Street, Ottawa. United States citizens and other non-Canadians should direct their inquiries regarding financial assistance to the American Council of Learned Societies, 345 East 46th Street, New York 17, N. Y. In addition, a limited number of small grants, some specially earmarked for particular courses, will be made available by the Canadian Linguistic Association. Inquiries should be directed to the Association's Secretary-Treasurer, Dr. W. S. Avis, Royal Military College, Kingston, Ontario.

A bulletin giving full details concerning the 1959 Summer School of Linguistics will be available soon. In the meantime, all inquiries should be directed to Dr. Ernest Reinhold, Director, Summer School of Linguistics, University of Alberta, Edmonton, Alberta, Canada.

Recent Publications

General Linguistics

Carroll, John B. The assessment of phoneme cluster frequencies. Lg. 34.267–278, 1958.

English Language Institute Staff (Robert Lado, Director; Charles C. Fries, Consultant). An Intensive Course in Eng-

lish. Ann Arbor: Univ. of Michigan Press. [Consists of four volumes, entitled English Sentence Patterns (Rev. ed., 1958; 340 pp.), English Pattern Practice (Rev. ed., 1958; 410 pp.), English Pronunciation (1954; 212 pp.), Lessons in Vocabulary (1956; 154 pp.).]

Mańczak, W. Tendances générale des changements analogiques I. Lingua 7.298–325, 1958.

Matthews, W. M. Phonetics and Phonology in Retrospect. Lingua 7.254–268, 1958.

Palmer, F. R. Linguistic Hierarchy. Lingua 7.225–241, 1958.

Quirk, R. Substitutions and Syntactical Research. Archivum Linguisticum 10.37–42, 1958.

Saporta, Sol, and Donald Olson. Classification of intervocalic clusters. Lg. 34.261–266, 1958.

Trager, George L. Phonetics: Glossary and Tables, SIL, Occasional Papers, no. 6, 1958. 27 pp.

American Indian Languages

Anderson, Arabelle. Two Chol Texts. Tlalocan [Mexico, D.F.] 3.313–316, 1957.

Croft, Kenneth. Nahuatl Texts from Matlapa, S.L.P. Tlalocan [Mexico, D.F.] 3.317–333, 1957.

Haas, Mary R. A New Linguistic Relationship in North America: Algonkian and the Gulf Languages. SJA 14.231–264, 1958.

Hildebrandt, Martha. Sistema Fonemico del Macoita [with an Apéndice of phrases, and three word lists]. Linguas Indigenas de Venezuela, no. 1, Caracas, 1958. Pp. 107.

Law, Howard W. Tamákasti: A Gulf Nahuatl Text. Tlalocan [Mexico, D.F.] 3.344–360, 1957.

Noriega, Raúl. Desciframientos de Inscripciones Ciclograficas del Mexico Antiguo. Mexico, D.F.: Conferencia en la Associación Mexicana de Periodistas, 1958. Pp. 26 (mimeog.).

Robins, R. H. The Yurok Language. Grammar, Texts, Lexicon. UCPL, v. 15, 1958. 300 pp.

Trager, George L., and Felicia E. Harben North American Indian Languages: Classification and Maps. SIL, Occasional Papers, no. 5, 1958. 35 pp.

Journals Received

Archivum Linguisticum, vol. 10, fasc. 1, 1958.

The Japanese Journal of Ethnology, vol. 22, nos. 1–2, n.d. [In Japanese, with English summaries of each article.]

Language, v. 34, no. 2, 1958.

Lingua, v. 7, no. 3, 1958.

The Muslim World, v. 48, no. 3, 1958.

PMLA, vol. 73, no. 4, parts 1, 2, 1958.